

"FACTS YOU NEED
BEFORE YOU BUY

SEPTEMBER 1945

VEGETABLE AND
FRUIT JUICES
"THERMOS" BOTTLES
CLOTHES BUYING

The Commercials

As this issue of the *Reports* goes to press, replies to CU's Annual Questionnaire are already pouring in. The big job of tabulation and analysis is only beginning; as it goes along, we will publish the data about our members and their interests on these pages. But though the systematic analysis is far from complete, even a casual dip into the cartons of returned questionnaires reveals some clear trends.

For example, many CU members were outspoken in their replies to the question, "Do you find radio advertising on the networks objectionable? . . . If you have any outstanding radio advertising dislikes, please list them." If a sampling of a few thousand questionnaires is any indication, the answer to part one of the question is a loud and resounding "YES" on the part of the majority. And several types of commercial ads get vigorous panning in answer to part two.

Pet peeves, in approximate order of irritation value, run something like this:

1. *Singing commercials.* "Pepsi Cola hits the spot," "Rinso white," "Cresta Blanca," and "Super Suds" rate high in this class.
2. *Chants.* Lucky Strike scores twice here, with "L.S.M.F.T." and the tobacco auctioneer. The "B.O." foghorn and "Why be irritated," among others, come in for their share of demerits.
3. *Interruptions in news programs.* Gabriel Heatter's vivid eulogies on Kreml receive special mention in this connection.
4. *Corny comedies. Dramatized commercials.* *Serutan spelled backward. Ads for laxatives and "health products."*

This, of course is just a sample. But we think it's a good indication of how most consumers feel.

CONSUMERS UNION is a non-profit organization chartered under the Membership Corporation Laws of New York State. Its purpose is to furnish unbiased, usable information to help families meet their buying problems, get their money's worth in their purchases, develop and maintain an understanding of the forces affecting their interests as consumers. Consumers Union has no connection with any commer-

CONSUMER REPORTS each month gives comparative ratings of a variety of products based on tests and expert examinations, together with general buying guidance, information on medical and health questions, and news of happenings affecting the consumer's interests. The Reports is the manual of informed and efficient consumers the country over.

THE BUYING GUIDE (published as the December issue of the Reports) each year brings together information from all the preceding issues with new material and special buying advice. Pocket-size, 384 pages, with ratings of several thousand products, the Buying Guide is an invaluable shopping companion. Every member gets a copy of the Guide with his membership.

BREAD & BUTTER reports each week on new and predicted price and quality changes in consumer goods, interprets Washington legislation as it affects consumers, reports government regulations and actions on the consumer front, advises on food buying and preparation.

SUBSCRIPTION FEES are \$4 a year, which includes subscription to the Reports and Buying Guide and Bread & Butter; \$3.50 without Bread & Butter (for foreign and Canadian memberships add 50¢). Reduced subscription rates are available for groups of 5 or more

cial interest and accepts no advertising; income is derived from the fees of members, each of whom has the right to vote for candidates to the Board of Directors. More than 70 educators, social workers and scientists sponsor Consumers Union and a national advisory committee of consumer leaders contributes to the formulation of policy (names of the members of the committee will be furnished on request).

(write for details). Library rates, for the Reports and Bread & Butter without the Buying Guide issue, are \$3.50; for the Reports alone, \$3.

Membership involves no obligation whatsoever on the part of the member beyond the payment of the subscription fee.

Better Go Slow

Long before the war, Consumers Union advised its members not to be among the first to buy new products or new models of old products. Take automobiles, for example. Every year (normally) expert engineers and production men design and build cars which, on the whole, embody only minor changes from the previous year's model. They design, study, figure, test, redesign, recheck, etc., etc. Yet, despite their wealth of knowledge and experience, despite all their figuring and checking, when the first cars come off the assembly line and get into the hands of consumers, things go wrong. "Bugs" is what the designers call these inevitable miscalculations. They expect them, and as fast as possible, they correct them. And those who buy the cars that come off the assembly line in later months get cars with the "bugs" eliminated. That's why it has always paid car buyers to wait.

The same thing holds true not only for cars, but for other consumer goods as well. Whether it's a new kind of electric shaver or a new refrigerator with five different compartments for five different temperatures, the first buyers will provide guinea-pig services for the manufacturers in finding out what mistakes the designers made, for the benefit of future buyers.

What was true before the war goes double now that postwar has arrived. Even where designs of the first postwar models are precisely the same as the prewar designs, troubles must be expected in the early production. In some cases, new or substitute materials will cause difficulties. In other cases, the fault will lie in lack of experience by production workers and inspectors shifted suddenly from war goods to consumer goods. In its current tests of electric irons, for example, CU technicians found that improper factory adjustment of the thermostat on one iron would cause serious difficulties in use.

But where manufacturers, feeling perhaps that consumers will demand radical changes in postwar products, embark on new and untried designs, anything can—and will—happen. If circumstances force you to go into the market at the earliest possible moment for a radio, or a refrigerator, or an automobile, stay away from the brand that is alleged to incorporate revolutionary developments unless you can afford the risk of having to replace the product in a short time. You can take it for granted that hasty consumers are going to waste many millions of dollars trying out brand-new revolutionary developments that will make wonderful reading in the advertisements, but that fall short of the enticing promises when it comes to performance.

If possible, wait for CU's test reports before you buy an expensive product that should serve you for years. CU's staff and consultants will report on the new products as soon as possible; but don't expect to find products rated as soon as they appear on the market. Tests of products like refrigerators and washing machines take many weeks to complete.

There's another angle on the business of waiting before buying. The end of the war by no means ends the danger of inflation. If too many consumers rush into the market with their savings to buy anything mechanical or electrical they can get their hands on before production gets into full swing and dealers' stocks can be built up, prices are certain to jump, and may set off a dangerous inflationary cycle.

Consumer Reports

"FACTS YOU NEED
BEFORE YOU BUY"

"Because it was established for the very purpose of aiding families to buy wisely, to avoid waste and to maintain health and living standards, and because it is the largest technical organization providing such guidance, Consumers Union recognizes a special responsibility to the nation. In full awareness of that responsibility, we pledge ourselves to do everything in our power to help Americans as consumers make the greatest possible contribution to the national need."—FROM A RESOLUTION ADOPTED ON DECEMBER 10, 1941, BY THE DIRECTORS.

VOL. 10, NO. 9 • SEPTEMBER 1945

REPORTS ON PRODUCTS

DDT: How to Use It Against Household Pests	228
Sewing Thread: One Spool is Not Like the Next; Ratings of Seven Brands	230
Heating Your Home: A Comparison of Available Systems	232
"Thermos" Bottles: Which Will Keep Coffee Hot?	238
Sanitary Napkins and Tampons: 45 Brands Tested	240
Sugar Syrups: Stretching Your Sugar Ration	242
Tomato Catsup: CU Rates 39 Brands of Our Most Popular Relish	243
Fruit and Vegetable Juices: Tasting New Varieties	244

MEDICAL SECTION

Tampons as Menstrual Guards—by Dr. Robert L. Dickinson	246
---	-----

NEWS AND INFORMATION

What Atomic Power Can Mean —by Dr. Gerald Wendt	248
--	-----

GROUP ACTIVITY

Your Winter Wardrobe: Shop With Care	250
--------------------------------------	-----

DIRECTOR: Arthur Kallet **EDITOR:** Madeline Ross

OFFICERS: Colston E. Warne, *President*; Hartley Cross, *Vice-President*; Harold Aaron, *Secretary*; Bernard J. Reis, *Treasurer*.

BOARD OF DIRECTORS: Harold Aaron, Eleanor C. Anderson, Frank Beube, Hartley W. Cross, Osmond K. Fraenkel, Florence Gluesing (staff representative), Leland Gordon, Harry Grundfest, Jerome Hellerstein, Arthur Kallet, Paul J. Kern (on leave in the armed forces), Emmanuel Klein, Edward Reich, Bernard J. Reis, Madeline Ross, Adelaide Schulkind, Colston E. Warne.

STAFF ASSOCIATES: Rissel Bonoff (*Senior Chemist*), Florence Gluesing (*Librarian*), Dorothy Steele (*Office Manager*), Sidney Wang (*Chief Technician, on leave in the armed forces*).

CORRESPONDENCE: should be addressed to Consumers Union, 17 Union Square, NYC (3). CU regrets that time does not permit answers to inquiries for special information.

33 Consumer Reports Is Prepared and Edited Under Union Conditions by Contract with Local 1 of the U.O.P.W.A.

REPORTS ON PRODUCTS

Ratings of products represent the best judgment of staff technicians or of consultants in university, governmental and private laboratories. Samples for test are in practically all cases obtained on the open market by CU's shoppers. Ratings are based on laboratory tests, carefully controlled use tests, the opinion of qualified authorities, the experience of a large number of persons, or on a combination of these factors. Even with rigorous tests, interpretation of findings is a matter on which expert opinion often differs. It is Consumers Union's pledge that opinions entering into its evaluations shall be as free from bias as it is possible to make them.

DDT

FOR HOUSEHOLD PESTS

... a discussion of how to use it, when to use it, and which form is best for various purposes

Now that the government has released DDT for civilian use, almost everyone wants to get hold of some, to use around the house. And they want to know in what form to buy it, how to use it, and, in view of the warnings on the DDT labels, whether it is quite safe to use.

DDT is the answer to the housewife's prayer, as well as the farmer's. Out of more than 3000 compounds tested on mosquitoes, the U. S. Department of Agriculture says DDT is the most effective. No other material retains its lethal power on sprayed surfaces over so long a period of time as DDT.

APPLICATION METHODS

The new insecticide is applied in the form of oil sprays, water sprays or dusts, depending on the use. Consumers are cautioned by the Bureau of Entomology and Plant Quarantine to use the proper formulation for a particular need, because the wrong preparation can be injurious. For example, 10% DDT powder will kill the fleas on your dog, but if you should sprinkle it on your cat, he may lick it off and become sick. The liquid oil spray is excellent in the

house, but the water spray is better for barn use.

Many different preparations of various strengths and in various vehicles are being sold and will be sold at retail. When you buy, be sure to read the label and to follow the instructions carefully. However, the law does not require that instructions be printed on the label, and already labels are appearing on the market which do not give complete instructions. This is inexcusable, since definite information is available as a result of extended tests by the U. S. Public Health Service, the U. S. Food & Drug Administration and the Bureau of Entomology and Plant Quarantine. Consumers Union has obtained from government agencies active in this work the results of their experiments to date and their recommendations for safe practices in the household use of DDT.

WHAT IT IS

DDT is the abbreviation of dichloro-diphenyl-trichloroethane, a white crystalline solid. It is toxic, but no more dangerous than other household insecticides. Like all insecticides, it is mixed with a vehicle, either

powder or liquid, which acts as an inert carrier and a diluent. DDT is a "residual insecticide," which means that it forms a film on the surface to which it is applied and is effective at the surface for a long time after application.

HOW TO USE DDT

The DDT preparation must be applied to surfaces on which insects walk or live. It should never be sprayed into the air. It forms a film over the surface of the wall, ceiling, floor or other area over which it is sprayed or dusted, and remains effective for as long as six months, the time depending on the concentration of the DDT. Its action is delayed rather than spectacular. Insects do not drop dead the moment they come in contact with DDT, but the slower killing power remains fully active for a long time. When mosquitoes or flies light on a treated wall, they show no immediate reaction. After five or ten minutes, however, they become irritated and begin a downward migration to the lower walls and the floor. After about eight minutes, some of them die, and most are dead in thirty to ninety minutes. Some may live for as long as five hours.

Unoccupied houses treated with DDT can be cleared of all insects except mites and spiders in a very short time. In occupied houses, elimination is a little slower because of the large proportion of out-of-the-way, untreatable surfaces. Indoors, DDT can be used on walls, screens and basement floors to eliminate flies, mosquitoes and fleas. It can be used in the closet as a moth preventive, around pipes and across the threshold as a cockroach and ant killer, and on beds as a bedbug eliminator.

POWDERED DDT

DDT is available in two powdered forms, as a dust called commercial DDT powder, and as a water-dispensable powder. The latter differs from the commercial powder in having a wetting agent added. This permits it to be mixed with water by the user and applied as a spray.

The commercial DDT powder consists of DDT mixed with talc, powdered soapstone, pyrophyllite or other suitable diluent. Consumers should buy the 10% strength—10% DDT, 90% inert ingredients. The powder is applied most easily with a bellows-type powder spray, which can be purchased in drug or hard-

ware stores. Commercial DDT powder is used widely by the armed forces to kill body lice. It is also effective against bedbugs, fleas and brown dog ticks. But it is not as generally useful in the home as the liquid sprays.

LIQUID SPRAYS

DDT is used in liquid form as a water, an oil, or as an oil-water-emulsion spray. An ordinary 25¢ hand spray can be used to dispense the liquid. Note that one quart of spray will cover effectively only about 250 square feet of surface. Don't expect to get protection by spraying a few ounces here and there around the house. Care should be taken, as some preparations may cause stains from the vehicle carrying the DDT. And water sprays leave a white stain.

When you spray a room, first remove or cover all the food to protect it from contamination. Remove or cover fish bowls, since DDT is injurious to fish. After spraying the walls, ceiling and other surfaces, it is advisable to leave the room, and to close it off for a half hour. This will trap the insects in a confined area, and allow the mist to settle.

EMULSIONS: An emulsion is formed when water is mixed with a DDT concentrate, which consists of DDT thoroughly incorporated into an oil with an emulsifier. These concentrates are sold commercially at various strengths. Buy the 20% or 25% concentration, no other. Already some brands are appearing that are too weak. You can tell when you are getting the 25% strength by the label, which reads, "25% DDT, 75% inert materials."

The Department of Agriculture says that the most effective strength to use at home is 5%. If you buy a 25% DDT concentrate, mix one part of the concentrate with four parts of water; if you buy the 20% strength, mix one part of the concentrate with three parts of water. If you need protection for only a few months, a 2½% emulsion will do. In that case, mix one part of the 25% concentrate with nine parts of water, or one part of the 20% concentrate with seven parts of water.

Use the emulsion on walls, under kitchen furniture and refrigerators, and on shelves. Do not use it on polished floors or furniture, as it may leave a water-mark. Do not use on animals, as the oils may irritate the skin. And keep it away from fire, as the oils are inflammable.

OIL SPRAYS: The best form in which to use DDT in the home is as a straight 5% oil spray, but keep it away from fire, as it is highly inflammable. To make this spray, mix thoroughly seven ounces of commercial DDT powder in one gallon of kerosene. For shorter-time protection, a 2½% oil spray, made by mixing three and one-half ounces of DDT powder in a gallon of kerosene is satisfactory. If you object to the odor of kerosene, you can mix the commercial DDT in deodorized kerosene, using five ounces of commercial DDT (the maximum that can be dissolved in this medium) to one gallon of deodorized kerosene. This makes a 4% spray, rather than the recommended 5%. Commercially-prepared deodorized DDT-in-oil spray can be made up to 5% because it contains an additional solvent which can be added commercially, but which is difficult to use at home. But a 4% spray is more than adequate for a few months' protection. Do not mix the spray near a flame, and it is advisable to turn out the pilot light when spraying the kitchen.

One application of the 5% spray should protect your home against flies and mosquitoes for several months. Commercial DDT powder

READ THE LABEL

Inspect the small print carefully before you buy a product bearing on its label the magic letters "DDT." Some of the products now springing up on store shelves contain so small a percentage of the new insecticide that they can be expected to have little effect on the insects they are supposed to banish. Others may be misleading as to instructions, calling for greater dilution than is required for real efficacy.

The suggestions presented in this article are based on information obtained by CU from experts in the U. S. Public Health Service, the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, and the Federal Food and Drug Administration. While the advice given is based on the best information now available to CU, it should be realized that the use of DDT is relatively new, and that further research may result in revision of some current opinions with respect to both its uses and its possible toxicity.

should cost 75¢ to \$1.25 a pound, and the spray is cheaper if you do the mixing with kerosene yourself, rather than buying it ready-mixed. But if you want to avoid the mixing job, you can buy the DDT already mixed in oil. But watch what you buy. Some companies are selling mixtures that are too weak. Buy the 5% or the 2½% strength, depending on your needs. If the strength is not indicated on the label, don't buy it. It's probably too weak.

The oil spray can be used on walls, bedding, ceilings, draperies and furniture. It should not, however, be used on blue wallpaper, as it may change the color.

WATER SPRAY: A 5% suspension can be made by mixing water-dispensable DDT powder and water. You can buy water-dispensable DDT powder in 20%, 25% or 50% DDT strength. Mix 13 ounces of the 50% strength water-dispensable DDT with one gallon of water for a 5% spray. To do this, first make a paste by mixing only a little water with the powder. Then gradually add all the remaining water, stirring constantly. For 2½% strength, use seven ounces of 50% DDT to a gallon of water. With weaker DDT powder, proportionately more is required per gallon.

The water spray has the advantage of being non-inflammable and odorless, but it may be objectionable, in that it leaves a white mark on walls and furniture. It can be used advantageously on bed-springs, basement floors and walls, and is especially useful in barns and chicken-houses.

HOW TO KILL PESTS

FLIES, MOSQUITOES, SANDFLIES: Treat all screens by dipping a rag, sponge or paint-brush in 5% oil spray, and rubbing quickly over the entire surface. On screens, this method is more effective and less wasteful than spraying. DDT does not wash off easily, but after heavy rain, screens should be re-treated. If you are treating only a dozen screens or so, rubber gloves will not be needed to do the job. But after you are finished, scrub your hands immediately and thoroughly with soap and water. For big jobs, use rubber gloves. Spray 5% oil solution on walls, ceilings, lamp cords, light fixtures, garbage pails and other places where insects light.

BEDBUGS: DDT is practically fool-proof when it comes to bedbugs. Use either a 5% water spray or a 5% oil spray. About three fluid ounces of

spray is needed for each double bed. Spray the mattresses, springs, pillows and joints in the bed frame. The spray should be forced into each joint in the bed frame, and the mattresses should be sprayed lightly on both sides. The bed may be used again after a few hours' drying.

10% commercial DDT powder can be used in place of liquid. One and a half ounces should be sufficient per bed. Apply in the same places as you would the liquid spray.

Walls need not be treated.

MOTHS: Remove all clothes from the closet, and spray the walls, door and ceiling with a 5% oil emulsion or water spray. Oil spray may be used on draperies and furniture.

FLEAS: Apply 10% commercial DDT powder under rugs, on basement floors, on the sleeping places of dogs and in holes and runways which are used by rats. A half pound of powder will treat about 1000 square feet. Or you can use a 5% oil spray in the places mentioned and on the top surfaces of rugs as well. Use as a coarse spray, one quart to 250 square feet. A fine spray will drift to the walls, where it is ineffective against fleas.

ANTS: Apply 5% oil spray behind and beneath baseboards, behind windowsills and frames, around the kitchen and bathroom sink, to table and chair legs, to both sides of pantry shelves, around water pipes, and in any cracks or crevices leading to the outside of the building. Most, though not all, species of ants will respond.

COCKROACHES: Ten percent DDT powder is as good as sodium fluoride, and the effect lasts longer. Apply the powder to areas where cockroaches promenade and to their hiding places. Also apply 5% oil emulsion or water spray to the undersides of table tops, drawers, refrigerators and shelving. As with sodium fluoride, it takes about a week before you can expect to notice much improvement.

FLEAS AND TICKS ON ANIMALS: Use 10% commercial DDT powder on dogs. Ruffle the hair with the left hand, and spread the powder with the right. Rub the DDT onto the skin. Half an ounce is enough for an average-sized dog. Wash your hands with soap and water after treatment.

The only places where it is safe to use DDT on a cat are the back of the neck and the top of the head. Cats lick other parts of their fur, and they become ill if they swallow DDT.

If you have brown dog ticks in the house, apply 10% powdered DDT to cracks and crevices, around baseboards, and to floor coverings. Allow it to remain for two weeks before vacuum-cleaning the treated rugs.

TOXIC EFFECTS OF DDT

Extensive experiments show that DDT is toxic, but no more so than lead arsenate, which is commonly used as a fruit and vegetable insecticide. However, the oil in which DDT is dissolved may be harmful to the skin after considerable contact.

If the DDT is used in accordance with the instructions given above, it is reasonably safe.

Use common-sense precautions. Keep it out of the children's reach; you don't want them to eat or drink it. Wash hands thoroughly with soap and water after DDT has been used. If you intend to do a major job, such as spraying the whole house, tie a handkerchief over the nose and mouth for protection against the spray. But most householders will apply DDT only to the screens, kitchen, bathroom, basement and the closets, and will not require a mask.

Because of the danger from absorption of the oil solution through the skin, and because of the danger from excessive inhalation, the U. S. Food and Drug Administration recommends—though it does not require—that the following caution be printed on the label: "This oil solution, if brought into repeated or prolonged contact with skin, can cause toxic symptoms. Avoid excessive inhalation and skin contact. In case of spillage on the skin wash with soap and water. Avoid contamination of food-stuffs. Do not use on household pets and humans."

As regards DDT itself, the U. S. Public Health Service says, "These experiments show also that the contamination of the skin from such residues as produced by the desired insecticidal concentration of DDT in air is of such low order that it will not cause injurious effects to humans. It should, however, be pointed out that the handling of DDT residues, as in the filling of aerosol bombs, if not done carefully, may result in such severe contamination of the skin, especially with repeated exposure, that toxic effects might occur in humans."

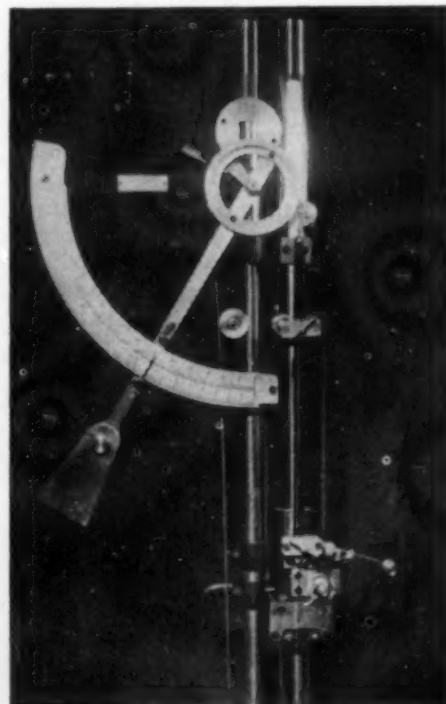
All this means that DDT is quite safe to use as an insecticide in and about the house if the rules outlined in this article are followed.

THREAD

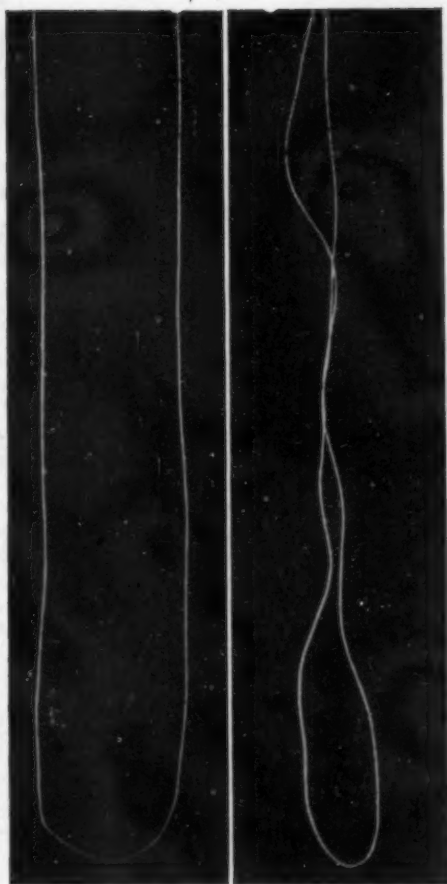
Some advice on which brands to use, to make that "stitch in time" both easy and durable

One spool of thread may, on casual observation, look pretty much like any other of the same color and type. But the experienced sewer has learned that the difference in quality between a good thread and a poor one can make the difference between a normal sewing chore and a very unpleasant job. Furthermore, the use of poor thread means the need for more frequent repair of seams and hems; it may even mean irreparable damage to the garment if the thread's color runs onto the cloth during laundering.

Nor are these considerations purely theoretical ones, CU's tests of seven brands of black and white threads, each in three different thicknesses, showed. The thickest thread tested (No. 40) in one brand was only two-thirds as strong as the thinnest tested



To find how strong they were, the threads were broken in a special thread tensile strength apparatus.



A Well-balanced thread (left) does not twist; a poorly-balanced one (right) twists and in use will form knots.

(No. 60) in another. Some brands were so poorly balanced that they would twist, knot and tear in the course of sewing; others were well-balanced, and could be expected to pull through the cloth smoothly, without knotting. Some black threads went through severe laundering tests with no color-change in either the threads or in the white cloth to which they were sewn; others dyed the test cloth dull blue. These and other factors were considered and measured in CU's tests.

TENSILE STRENGTH, the most important factor in the rating of the threads, is the amount of pull the strand can take before it breaks apart. A reasonable strength is obviously important if seams are not to rip and hems tear down. Thicker threads would normally be expected to be stronger than thinner ones, but actual measurements showed that this was not always the case. Some thin threads were much stronger than thicker ones in other brands. Tensile strength tests, made on ten different sections of each of the 42 spools tested,

showed the following average ranges: No. 40, 1.7 to 3.5 lb.; No. 50, 1.7 to 3.6 lb.; No. 60, 1.5 to 2.3 lb.

BALANCE was considered next in importance in rating the threads. This is a measure of the thread's tendency to twist and knot during sewing, and is measured quite simply by making a loop of a yard-length of the thread, and noting whether the loop remains open or whether it tends to twist. The greater the number of twists in the loop, the more poorly-balanced—and the more likely to be troublesome—the thread. (See illustration.)

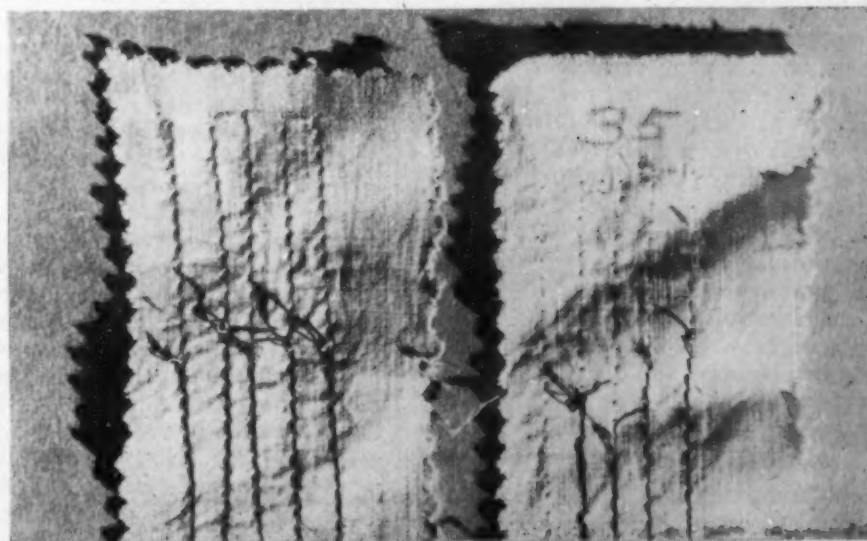
COLORFASTNESS of the black threads was tested by machine-sewing them onto individual white cotton cloths, then washing each cloth at 120° F. for a half-hour, rinsing, and ironing while wet. Three brands did not discolor the cloth, even under the stitching; two others discolored the cloth only under the stitching (this is known as "bleeding"); one dyed the whole cloth and showed bleeding besides. The remaining brand was variable; all samples bled beneath the stitching, and one of these also dyed the cloth. Colorfastness is particularly important where stitching of one color is to be used for decorative purposes on cloth of another, or in using colored thread on a print fabric. In such cases, it is advisable to sew first on a sample piece. Wash and iron this to make sure the color is satisfactory before you start work on the garment.

SPLICES AND PLY KNOTS are uneven places in the thread where broken

ends of the strands have been joined together. A well-spliced or well-knotted joint is so small that it can pass unnoticed through the needle or the cloth. But poorly-made joints cannot pass through the needle, and may even break the needle in machine-sewing. In the tests, splices and knots were checked to see whether they could be passed through a No. 11 sewing machine needle (the size used for No. 100 thread). Threads having splices or knots which failed to pass were penalized in score. *Star Six Cord* and *Clark's ONT* made a poor showing here.

TICKET NUMBER OR GAUGE is the number appearing on each thread label as an indication of the thread's thickness. The smaller the ticket number, the thicker the thread. In theory—and according to U. S. Department of Commerce Specifications—a thicker thread should be stronger than a thinner one. Actually, this is not always the case even within a given brand. In rating the brands, CU considered strength as more important than thickness, so long as the thread was not unnecessarily thick for its strength. Thus, a thread labeled "No. 60" which met the tensile strength requirements for a No. 60 thread was not penalized if it was thinner than called for in the specifications. But another thread marked "No. 60" and having the required tensile strength was penalized in its score if it was thicker than the specifications permitted.

FINISH: There are three common finishes found on cotton sewing



During laundering, the thread on the left bled and stained the cloth to which it was stitched. When laundered under the same conditions, the thread at the right neither dyed the cloth nor bled onto it.

threads: "silk finish," "mercerized" and "soft." Mercerized and silk finish are hard to differentiate from one another; both are lustrous. Soft-finish thread is dull in appearance, and looks somewhat "fuzzy" on the spool. Federal specifications for the different types of thread vary in minor details, but there are no clear-cut differences in performance specifications among the types. It is well, therefore, to select the best available brand in the thickness and color you want, rather than to look for a particular finish.

LENGTH: Yardage measurements were made of all the threads tested. In practically all cases, the spools held two or more yards over the labeled length.

CONCLUSIONS

Crusader brand was found outstandingly superior to all the other brands tested. All *Crusader* threads were colorfast and in excellent balance; they met Federal specifications for tensile strength and ticket number.

If the ticket number you want is not available in a good brand at the time you are buying thread, it is generally wiser to compromise in the direction of a thinner thread in a good brand than the right size in an inferior brand. Actually the difference in strength between adjacent ticket numbers in a good thread is small, and the chances are that a No. 60 in a good brand will be as strong or stronger than a No. 50 in an inferior brand.

The brands below are listed in estimated order of over-all quality, based on the tests outlined above. Six spools—three black and three white—of each brand were tested.

Crusader (Gardiner Hall, Jr. Co., Willington, Conn.). 5¢ for 150 yards. Soft finish. Ticket numbers correctly marked. Good tensile strength. Excellent balance and colorfastness.

W. Warren's (W. Warren's Thread Works, Westfield, Mass.). 5¢ for 125 yards. Soft finish. Ticket numbers incorrectly marked on two of six spools tested. Good tensile strength and bal-

ance. Excellent colorfastness. Available nationally.

Star Six Cord (American Thread Co., NYC). 5¢ for 125 yards. Soft finish. Ticket numbers correctly marked. Good tensile strength. Fair balance. Excessive number of thick splices. Color bled slightly.

Knight Brand (Max Pollack & Co., Groton, Conn.). 5¢ for 150 yards. Silk finish. Ticket numbers correctly marked. Fair tensile strength. Poor balance. Color bled slightly.

Clark's ONT Spool Cotton (Clark Thread Co., NYC). 5¢ for 125 yards. Soft finish. Ticket numbers correctly marked. Good tensile strength. Very poor balance. Excellent colorfastness. Excessive number of thick splices.

Brook's (Jonas Brook & Bros., Inc., NYC). 3½¢ (3 for 10¢) for 100 yards. Silk finish. Ticket number incorrectly marked on one of six spools. Poor tensile strength. Fair balance. Variable colorfastness; two spools bled; one bled and dyed cloth.

Clover (manufacturer not stated). 2½¢ (2 for 5¢) for 100 yards. Silk finish. Ticket numbers correctly marked. Poor tensile strength. Fair balance. Not colorfast; all blacks bled and dyed cloth.

Heating Your Home:

A comparison of the available types of heating plants, with expert advice to help you solve your Winter heating problems

With the end of the war, many home owners who suffered from all the inadequacies of antiquated heating plants during the war period of fuel shortages, are beginning to think about installing a new heating plant. Builders of new homes will also face the problem of what heating plant to install. The first question they must answer, however, is not what company to buy from, or even whether to heat with coal or oil; but rather, what kind of heating system—steam, hot water or hot air—they want. The table, diagrams and discussion which follow are intended to help the home owner in making this initial decision.

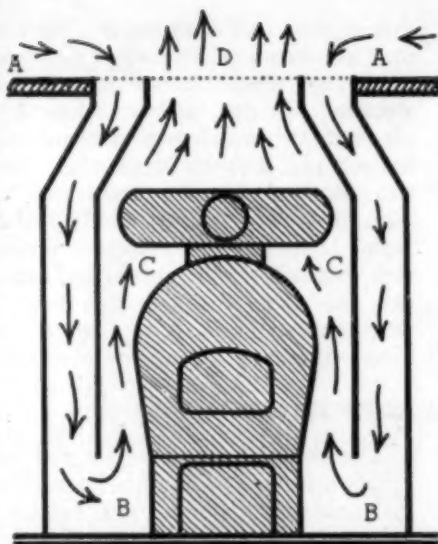
It should be emphasized at once that this is the time for evaluation; the time has not yet come to plunge into the purchase of a new heating plant if you can winter out another season with the one you have. Equipment is still scarce, selection is limited, and prices remain high. Nor are

Don't be hasty in making major changes in your home heating plant or in installing a new plant. While new installations can sometimes save the home owner enough money on the yearly fuel bill to make the initial cost worth while, it may, in some cases, give no greater satisfaction than your present plant, and total operating costs, including repairs and power for motors, may be even higher. Small and relatively inexpensive changes which can often improve efficiency and lower costs were discussed in the August issue of the *Reports*. In this article, CU presents some notes on various types of heating systems for the benefit of those who are considering new installations.

the models now available as good as may be expected when real postwar production has resumed. But if your

plant is reaching the end of its tether—and a great many plants throughout the country are—it's not a bit too early to begin serious consideration of the heating problem, with investigation into the fundamentals of what's to be had, what's in the offing for the near future, and what are the advantages and disadvantages of the available types of heating plants.

When you are making up your plans, keep in mind these basic facts: The equipment you buy is likely to be with you for a good many years. And during those years, it will affect your comfort or discomfort for something like six months of every year. Furthermore, the operating costs of the various types of units are widely different; low operation may in some cases justify high installation cost in a relatively short time. An unwise choice of heating plant may make your heating ex-



PIPELESS HEATER (above) is recommended only for small houses or for occasional use. Cold air from the floor above enters at A, flows past the heater along B and C, and rises as a column of warm air at the floor outlet, D.

penses perhaps twice what they should be, without giving you anything in the way of added comfort.

If your problem is to plan a heating system for a new home, you would do well to consider all available systems, with due regard for the advantages and disadvantages of each. But if you are buying a new heating plant to replace one already installed in your home, your best bet will probably be one of the same type you now have. This will minimize the installation costs.

If you are installing a heating plant in a home which previously had none, a boiler-radiator installation is generally most feasible, as ducts for hot-air heating must be built into walls.

STEAM HEATING

Two-pipe steam systems, although they do have advantages in the heating of apartment houses and large office buildings, may be dismissed in a consideration of small houses. These systems, while costing a great deal more than one-pipe steam-heating plants, are no better in comfort-producing characteristics. And they have all the disadvantages of the one-pipe steam systems for home heating.

Briefly, these disadvantages are:

1. Steam heat tends to be "bumpy," especially in mild weather. As an illustration, consider the sequence of events in a steam-heated

house with a thermostatically-controlled oil burner or coal stoker, when the outside temperature is about 40°. When the room temperature falls a degree or so below the thermostat setting, the burner goes into action, and steam at 212° or more rushes into the radiators. This sets up a blast of heat from the radiator, quite uncomfortable if you happen to be sitting near it, and far greater than is required to heat the room. The room quickly becomes overheated, the thermostat shuts off the steam, and the radiators become stone-cold before they get another charge.

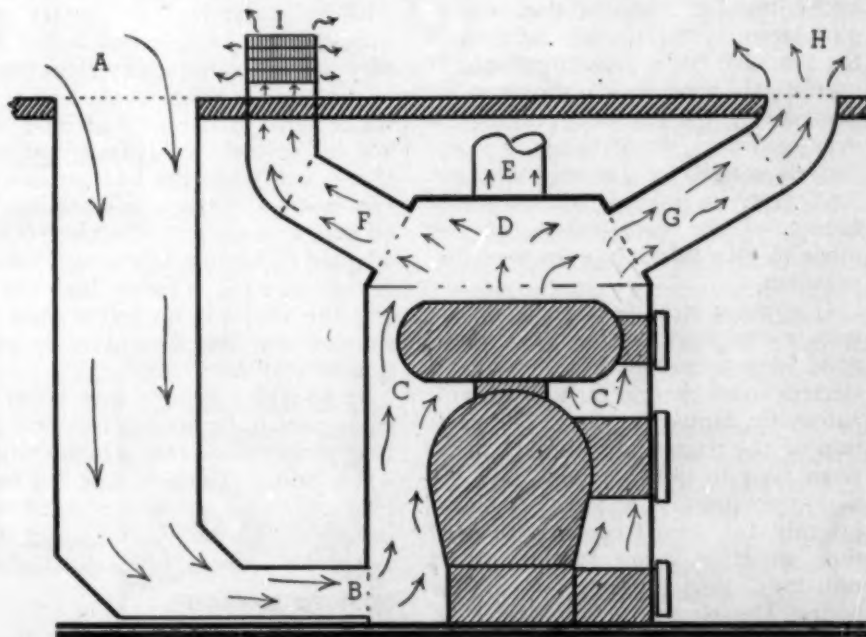
You can improve this situation somewhat by setting the thermostat for very short "on" periods, so that only a little steam comes up each time, and the "off" period is consequently shortened. But this heads you into two difficulties. In the first place, these undersize steam charges will probably not be enough to heat every radiator in the house properly; upstairs rooms are likely to be cooler than downstairs rooms. And secondly, your fuel bills will be relatively high, for the shortened cycle is wasteful of fuel.

2. The second basic trouble with steam heating lies in its unequal distribution of heat to the different radiators. With automatic firing by gas or with an oil burner or coal stoker, the "on" steam period generally runs to 20 or 30 minutes, on the average.

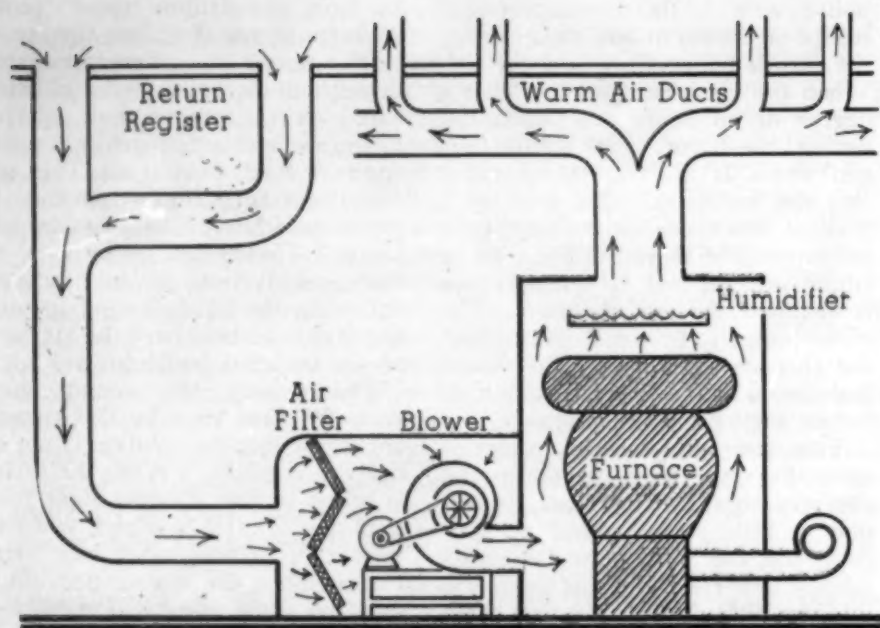
In most installations, these "puffs" of steam do not distribute themselves evenly among the different radiators throughout the house; some radiators may overheat, others work satisfactorily, and still others get only mildly warm or don't heat at all. This condition can be partially remedied by the installation of "adjustable vent valves." These allow air to be let out more quickly from the cold radiators (allowing the steam to get in more quickly), and hold back the air outlet on the radiators which are too hot.

Theoretically, this sounds good. Actually, field tests by CU consultants show that the solution is not entirely satisfactory. When the system is tuned so that it's just right for a mild day, it's out of whack when the weather is colder, and vice versa. Furthermore, the system gets out of tune too easily even at a given temperature level, and constant readjustment of the valves is necessary for even heat.

If the heating is by hand-fired coal, the results are even worse than if the system works automatically. A small, steady fire, with the typical steam plant, generally results in one or two hot radiators in the rooms nearest the boiler, and cold radiators in the rest of the house. When the fire is built high enough to heat the radiators throughout the house, the rooms closest to the boiler are generally greatly overheated. This uneven heating is



WARM AIR, GRAVITY CIRCULATION, represents a "Best Buy" for many homes. Air from the floor enters at A, flows to the base of the furnace (B), becomes warmed as it passes through the furnace (C), and enters the bonnet (D). From there ducts (E, F, G) conduct it to radiators (H, I).



FORCED CIRCULATION, WARM AIR plants work on the same principle as the gravity-circulation system shown on the previous page, except that the blower increases circulation. The system shown has a humidifier and air filter, improperly advertised as giving "Winter air conditioning."

described technically as the "poor distribution characteristic" of steam heating. In contrast, a thermostatically-controlled or hand-fired hot-air or hot-water plant gives an equal amount of heat to each heat outlet during the "on" period, or with a low, even fire.

But even with its serious drawbacks, the fact remains that a one-pipe steam system is the cheapest of the available boiler-radiator plants. It is relatively inexpensive, simple to install, and gives excellent heating on very cold days, even though it is not entirely satisfactory in mild weather. And even in mild weather, careful tuning of the vent valves can be made to give tolerably even heat distribution.

If you use hand-fired coal or coke with a one-pipe steam system, it's a good idea to supplement it with an electric room thermostat tied in with automatic damper controls. The position of the dampers is thus changed from time to time on mild days, so that the fire is allowed to burn brightly for a half-hour or so at a time to drive steam to the distant radiators, then banked for a few hours. The electric room thermostat takes care of this damper setting, for it operates in such a way as to pick up the fire every time the temperature drops a degree or so, and then banks the fire when the radiators have received their supply of steam.

THE HOT WATER SUPPLY

A big advantage of the steam heating plant is that it is easily adapted to heat a hot-water tank, and you can have hot water at very low cost—throughout the Winter if the plant is hand-fired and year-around if it operates with a stoker or an oil burner. Warm-air furnaces can also be fitted with a "water leg" or "water coil" over the fire to give hot water. But they are less satisfactory than water-heating on a steam system, for the water tank is likely to become very hot on severely cold days, but only luke-warm when the weather is mild. Hot-water systems which are fired by oil or by an automatic stoker can be adapted to heating tap water, but the device required is rather high-priced, and the result is no better than the simpler and less expensive installation on a steam system.

If you are buying a new boiler, or equipment to be hooked to a boiler to heat water, don't buy a tankless-type water heater. The best type is a tank-type indirect water heater, to be used in conjunction with a hot water storage tank.

COST TO OPERATE

As opposed to low installation costs, the fuel costs of a steam heating system generally run to something like 10% to 15% higher than hot-air or hot-water systems of comparable quality. A large portion of

this excess fuel cost lies in the fact that the steam plant operates at relatively high temperatures, even in mild weather, and the basement heat loss tends to run much higher than with hot-air and hot-water plants, which run at much cooler temperatures. This loss can be partially offset through the use of effective insulation, but even with costly and efficient insulation, the heat loss from a steam plant tends to be higher than from other types of heaters.

HOT WATER VS. HOT AIR

The battle between hot-air and hot-water heating systems has been going on for decades, but it's still far from resolved. In the course of the first quarter of the century, hot-air gained a strong foothold in the Midwest, with the Northeastern area generally covered by hot-water, boiler-radiator systems. Just why this sectional distribution occurred is hard to say. The fact is that the hot-air systems were much cheaper, whereas the boiler-radiator setups generally gave more satisfying heating.

Then along came the first oil burners and automatic coal stokers, and boiler-radiator makers were able to score an important point. For with the automatic heat coupled with forced circulation was introduced an economy factor in the form of year-around hot water at very low cost, and practically no trouble at all. Hot water which would cost perhaps \$40 a year with a separate heater could be secured for no more than \$15 extra fuel cost. The swing to this type of installation reached its peak in about 1930.

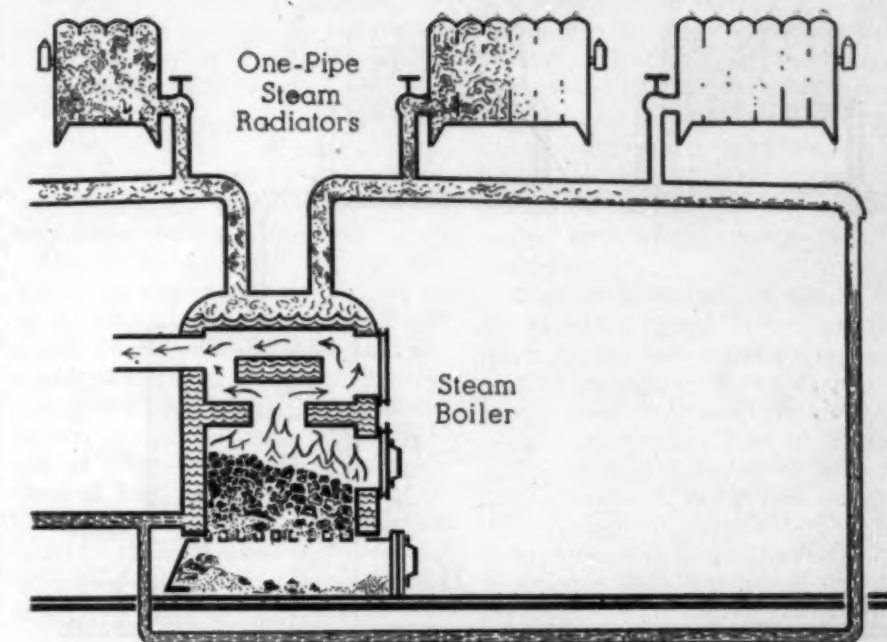
Not to be daunted, however, the furnace manufacturers, around 1935, decided to add forced circulation to their systems. This proved to be a bonanza of mighty proportions. For the forced circulation made possible the use of smaller, less expensive air ducts, and allowed hot air to be sent to previously hard-to-heat rooms. Furthermore, the ducts could be placed between the beams of the cellar, instead of sloping upward from the furnace, as in the past. And, lo and behold, the formerly messy cellar was transformed into a spacious game room, rumpus room, workshop or bar. Furnace manufacturers added handsome jackets to their furnaces, and the formerly-disowned furnace took its place right in the handsomely-decorated cellar room. The boom was on, and flashy catalogs

with colored illustrations of how you might fix up your own cellar did yeoman's work for furnace sales.

And as if that weren't enough, the furnace manufacturers brought up a real gem of an idea. They added an "air filter" and an "automatic humidifier," and produced "Winter air conditioning." The words were magic, and many home-owners were tempted to forget that what they needed, primarily, was a good heating system rather than a magic word. On the whole, those who bought hastily were doomed to disappointment. And, though manufacturers still capitalize on the magic words, a recent field survey made for CU of home-owners who had such systems installed shows less than complete satisfaction with the whole scheme. In the matter of air filters it was found that:

1. In hundreds of homes equipped with "Winter air conditioners," the "filtered air" feature means so little that the home-owners throw the filters away when they get too dirty, and never bother to replace them. Furthermore, they don't notice the difference, when the filter is gone.

2. The dust removed by filters is actually very little. In the course of a year a typical filter will hold back no more dirt than you get in a vacuum cleaner bag by working the cleaner in the same house for a half-hour or so.



STEAM systems tend to give uneven heating, particularly if the coal is fired by hand. However, it is inexpensive, as boiler-radiator systems go, and it is easily and cheaply adaptable to heating a hot-water storage tank.

3. In some homes—despite the fact that directions call for replacement or cleaning of the filters every six months or a year—home-owners hadn't bothered to check their filters for the past two or three years. The result was that the filters were so clogged with dust and dirt that they were restricting the flow of air

through the systems, and were making for poor heating and unnecessarily high fuel bills.

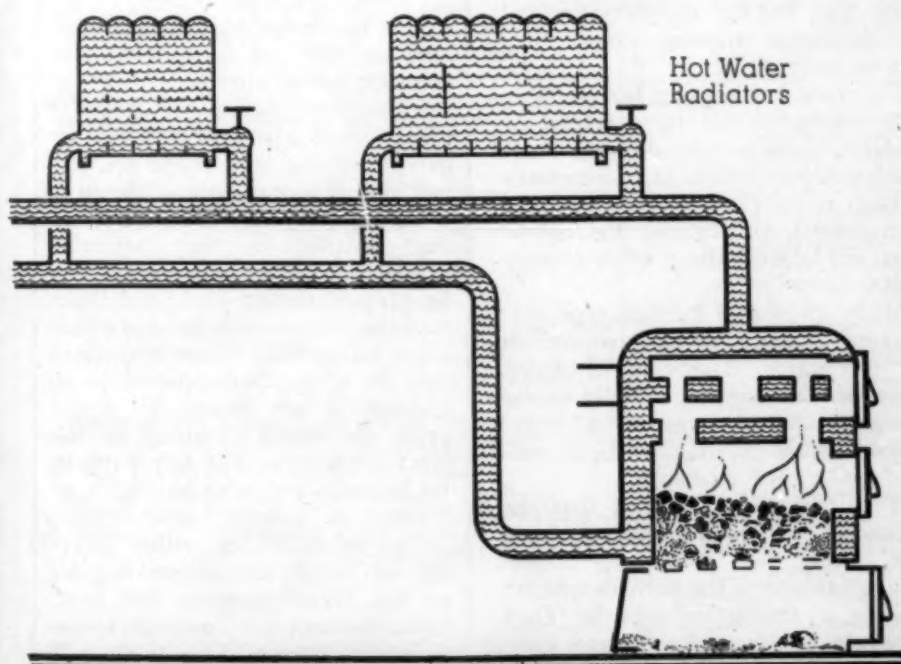
With regard to the "humidifiers" which are highly touted as part of the air conditioning, and which are claimed to "improve your health, lessen tendencies towards head colds and throat and nose troubles . . . cut down your doctor bills," CU's findings, based on field studies, showed the following:

1. In the typical "Winter air conditioning" unit, the humidity output of the plant was only a small fraction of the amount required to increase home humidity by the amount claimed in the sales literature.

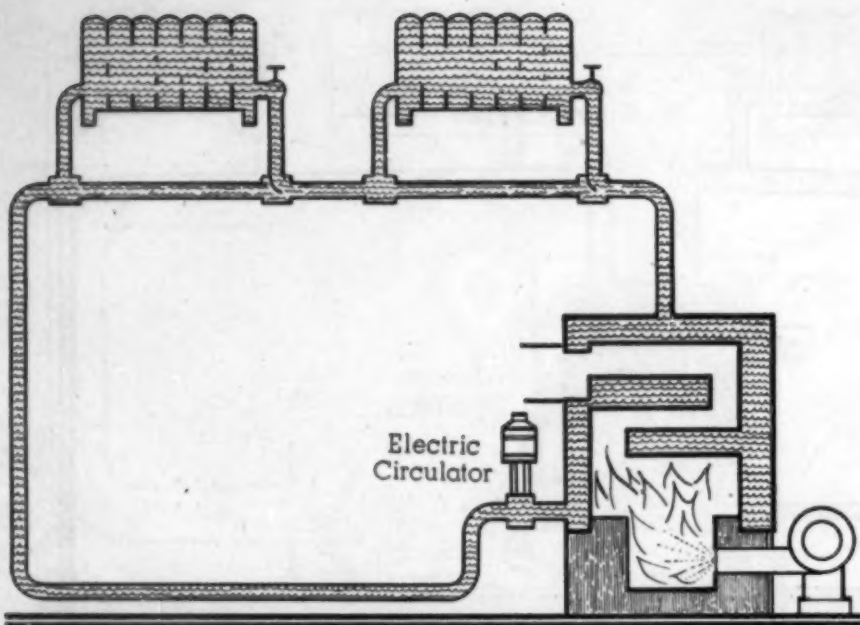
2. Occupants of the homes having humidifying systems were not able to tell when the humidity apparatus was off and when it was on, when the switch was made without their knowledge.

3. On many installations, the humidifiers were of poor construction with respect to controls and to water feed valves, and they quickly became inoperative. In a high percentage of these, the home-owners did not consider the feature important enough to have the system fixed.

4. When really effective humidifiers were installed in some homes, other difficulties cropped up: The inside panes of the windows became coated with ice during cold weather; cool walls became damp; toilet boxes



GRAVITY-CIRCULATION HOT WATER HEATING gives smooth, steady, low-cost heat. It is well adapted to all types of houses, and can be used with any fuel and any type of firing. This system can be adapted to year-around water-heating by the addition of a "butterfly valve."



FORCED-CIRCULATION HOT WATER HEATING, is like the gravity-circulation system, except that it makes use of an electric circulator for more rapid heating. This is an excellent system, but it involves unnecessary expenditure for many houses.

sweated and wet the bathroom floors; windows became frozen shut; window sills and wood trim were damaged from the ice which had melted and dripped down on them when the sun shone on the window panes.

5. The presence of humidifying apparatus did not save fuel, as is frequently claimed.

With regard to both the "air filter" and "humidifier" features of these "Winter air conditioning systems," the conclusion is inescapable. Until and unless they can be improved far beyond their present stage of development, they're simply not worth the money or the trouble. On the whole, their presence appears to be a detriment rather than a benefit.

A claim made by some sellers of the "Winter air conditioning" units is that, with the heat shut off, they can be operated in the Summer to increase hot-weather comfort. The inference is made that cooling and de-humidifying equipment will be easy to add, and the result will be a year-round air-conditioned house. CU's consultants find no substance in either of these claims. Don't confuse your dreams of some day having Summer air conditioning in your home with the hard reality of installing a good heating plant now.

This is not to deny the advantages of a good, forced-circulation warm-air heating system, properly installed, without the fol-de-rols. Even a rela-

tively inexpensive installation of this sort, equipped with a pot-type oil burner which uses kerosene or the relatively inexpensive "No. 1 fuel oil" can give very good heating, with surprisingly low fuel costs. Another of the big advantages of this type of heating system is the absence of bulky and wall-space-consuming radiators. The hot-air registers are flat and relatively inconspicuous; they take up little space.

The very inexpensive furnace systems which do not have return-air registers in each room do have some disadvantages. Often it is necessary to keep room doors open, to assure even heating throughout the house. This may be a handicap when privacy is desired.

Many owners of furnace-type systems use gas-fired heaters to produce hot tap water. The cost of water heated in this way is generally excessive as compared to the cost of year-around water heating with an oil-fired boiler, for example.

It is not to be assumed that the boiler-radiator manufacturers have been taking the "Winter air conditioning" claims of the furnace makers without a strong fight back. They have been putting out their own campaign, based on "radiant heat," which is "like heat from the sun." With unhesitating disregard of, and without abandoning these claims, the boiler manufacturers went on to the pro-

duction and installation of concealed radiators, which cut down with amazing efficiency the flow of "radiant heat."

Again, this trumped-up claim does not mean that the system is a bad one. Unquestionably a boiler-radiator system has many advantages. But the consumer should disregard the claims and buy his heating system on its real merits.

FORCED CIRCULATION

One of the big sales points for hot-water or hot-air heating systems, in prewar days, and one that threatens to make a strong comeback, is "forced circulation." You are almost certain to be told that it is a "must" for a truly up-to-date heating system. But better take a close look at the facts before you let yourself be sold on the idea.

Stripped of the glamorous advertising sales talk, forced circulation simply amounts to putting a motor-driven fan or pump into the hot-air or hot-water system to get the heat around to the registers or radiators more rapidly and more evenly. While forced circulation is often desirable with hot-air systems, and under certain special conditions, its disadvantages are worth noting carefully:

Note on Table

The tabulation on the next page is a summary of facts about and comparative merits and faults of the various types of heating plants. It is given, necessarily, in general terms, and there are exceptions. For example, Column 5 gives the fuels and firing methods best adapted to the particular plants, but actually any plant can be adapted to any fuel; and there may be circumstances in which fuels other than those mentioned may be best. The prices given in Column 2 are based on actual price quotations obtained in the New York area. For any particular house, prices may be higher or lower.

For most houses, either gravity- or forced-circulation hot air or hot water systems are best. Other systems are, however, sometimes preferable. This table will help you compare available types, if you are considering a new installation or if you plan to buy or build a house.

- The electric motors and electric controls of the forced-circulation systems use electricity in amounts which may add substantially to your heating bill. Such an installation may use up to \$30 worth of electricity yearly to heat a five- or six-room house.

- Check-up and servicing charges on these electrical installations can be counted on to cost from \$5 to \$15 a year.

- Breakdowns — and they are liable to occur at the most inconvenient times when you are dealing with motors and motor-driven parts—may leave you without heat until you can get the services of a repairman.

- In rural districts where electrical breakdowns are common, forced circulation systems are entirely unsatisfactory.

- With a stoker or oil burner, the boiler may be damaged by over-heating if the forced circulation breaks down during cold weather.

- Any motor makes a certain amount of noise. And unless your home is of reasonably noise-proof construction, the sound of the motor may cause serious annoyance.

Despite these considerations, the forced-circulation systems are not to be discounted entirely; under some circumstances, they have positive advantages over the standard gravity-circulation installations. Thus, if the gravity system shows signs of "sluggish circulation"—when radiators are slow to heat, when the radiators in different parts of the house do not all heat up to the same temperature, when some radiators are slower to heat than others—a forced-circulation

installation is worth considering. It may also be economical if you have a stoker or an oil burner, and want it to provide hot water for your faucets both Winter and Summer. The cost of the hot water provided by a forced-circulation system is generally much lower than the same water heated with manufactured gas, for example.

The rule home-owners should follow is rather simple. Remember that much of the talk about the advantages of forced circulation is just so much sales ballyhoo, designed to make a sale, rather than to improve your heating comfort or to cut your heating costs. A really well-designed old-style gravity-circulation system may work as well, and more cheaply and conveniently than any forced-circulation system. But if your heating

Types of Heating Plants

and a check list of their relative merits and uses

1. TYPE OF HEATING PLANT	2. COST TO INSTALL IN 5-ROOM HOUSE	3. HOMES TO WHICH BEST SUITED	4. RELATIVE COMFORT	5. BEST ADAPTED FUELS AND FIRING METHODS	6. REPAIR AND UPKEEP	7. COMMENTS
Pipeless Furnace	Cheapest; about \$120	Only for inexpensive, compact 4-5 room houses	Very poor; gives drafts and cold floors	Generally hand-fired coal; rarely stoker or oil. "Floor furnaces" use gas or light oil	Very low	Unsatisfactory for most homes. Buy only if essential to cut costs, or for temporary heating in stores, week-end cottages, etc.
Gravity-Circulation Warm Air	Low; about \$225 to heat all rooms	Easy-to-heat, compact homes with high cellars	Fair to excellent. Best when no rooms are hard to heat	Good for all fuels and firing methods: gas, stoker, oil-burner, hand-fired coal	Very low	A "Best Buy" for thousands of homes in the \$3500-\$7000 price range, provided floor-plans and basement are suitable.
Forced-Circulation Warm Air	Medium; \$325 including wiring, controls	Adaptable to large houses	Excellent	Good for all fuels and firing methods: excellent for gas, stoker or oil burner	Medium to high	Best furnace-type system, but "Winter air conditioning" features give no added advantage. Good for hard-to-heat rooms.
One-Pipe Steam	Cheapest boiler-radiator plant; \$285	All but smallest 4-5 room houses	Fair to good	Does best with automatic firing; with hand-fired coal, electric thermostat needed	Low	A "Best Buy" in radiator heating if low initial cost is important. "Bumpy" heat; uneven distribution in mild weather. Cheap hot water.
Two-Pipe Steam	Medium to high; \$350-\$400	Popular for large buildings; can be used for all but smallest houses	Fair to good	Best with automatic firing; with hand-fired coal, electric thermostat needed	Medium	Good for schools, apartment houses, etc., but more expensive and no better than one-pipe steam for small homes.
Gravity-Circulation Hot Water	Medium; about \$350	Best for small and medium-sized homes but suitable for all sizes	Excellent; smooth and steady	Well adapted to all fuels and firing methods	Very low	All-around "Best Buy" for most homes. Even heat with fuel costs 10%-15% below one-pipe steam.
Forced-Circulation Hot Water	Medium to high; \$380-\$400	Best for medium to large houses, but suitable for all sizes	Excellent; smooth and steady	Does best with automatic firing by gas, oil or stoker; not good with hand-fired coal	Medium to high	Best boiler-radiator plant; heats very quickly. Good for hard-to-heat homes and those without basements. Cheap hot water with stoker or oil burner.
Split System	Very high; \$550-\$600 or more	Best for very large houses	Best available	Can be engineered to suit any fuel or firing method	Medium to very high	Combines advantages of furnace-type and boiler-radiator system; excellent for wealthy home-owners. Should be designed by expert heating engineer.

system is a poorly-designed relic of the gay-nineties period, if it does not give satisfactory circulation, a forced-circulation system might be well worth considering. Even under such circumstances, however, make sure that the advantages of the device and the persuasiveness of the salesman do not keep you from weighing its disadvantages against the improvements it may bring about.

DON'TS for Buyers of Heating Equipment

DON'T buy hastily. First discuss your problems with several reputable local heating contractors, and get opinions and price quotations from each.

DON'T buy a skimpy heating plant, calculated to be barely large enough. Make sure that the furnace or boiler is of good design and of generous size.

DON'T let yourself be sold on a plant because of "special features" such as "Winter air conditioning." Remember that what you are buying, basically, is a sound heating plant.

DON'T buy a furnace or boiler which is built to burn only one type of fuel. Rather get one which is adaptable to several kinds.

DON'T buy unusually complicated equipment. The simpler the equipment, the fewer parts there are to get out of order.

DON'T fail to consider the added costs of electricity and servicing when you consider the purchase of automatic equipment.

DON'T forget about heating water for the taps. You may find it most practical to have it heated with the same equipment which heats the house.

DON'T tear out an installed heating plant and switch to an entirely new type.

DON'T install concealed radiators without having them well insulated behind. And use only the type which can be readily opened for occasional cleaning.

DON'T have a particular type of heating plant installed until you have studied the advantages and disadvantages of the other available types.

"Thermos" Bottles

Ratings of available types and brands of vacuum flasks and non-vacuum insulating bottles

In the American language, the word "Thermos" — like "Vaseline" and "Kleenex"—has come to signify for most people a type of product and not just a brand name. Actually most heat-retaining containers generally referred to as "Thermos bottles" are more properly called "vacuum bottles"; "Thermos" is the brand name of the most widely-sold brand.

But other brands are available; CU shoppers were able to find, in addition to *Thermos*, vacuum bottles labeled *Hy-Lo*, *Landers*, *Universal*, *St. Regis* and *Stanley*. Many of the 22 samples in these brands showed their wartime origins. In some cases, fiber had been used to replace metal for the outside containers; scrap metal from old beer cans was used on some bottles as part of the outside shells; some of the aluminum parts, including the cup and the neck fitting were replaced with plastic, glass or non-rust-proof metal.

No quart sizes were to be found in the stores, consequently only pint-size bottles were tested. It was found, in most cases, that even "pint" was something of an exaggeration, for only six of the 22 bottles would hold a full pint when filled to the brim. And when room was left for the insertion of the cork, even the contents of these were lowered to about 15 ounces. Of the remainder, the net contents (with cork inserted) ranged from 13¼ to 14¼ ounces.

Of the brands tested, only *Thermos* and *Hy-Lo* were found to be generally satisfactory; *Landers* and *Universal* were highly variable, with only one sample out of three giving satisfactory performance; *St. Regis* and *Stanley* were generally "Not Acceptable."

HOW THEY WORK

Why vacuum bottles keep things hot or cold for many hours is not difficult to understand. The principle is the same as that governing any type of heat insulation—put a poor conductor of heat between two things at different temperatures, and you

slow up the natural process of heat transfer. In the case of vacuum bottles, the non-conductor is a vacuum, sealed between the walls of a double bottle (the familiar silvered inside of a vacuum flask). The silvering has its role, too, in that it cuts down radiation—another method of heat loss.

Bottles of this type are expected, according to government specifications, to permit a temperature drop from 95° Centigrade (205° Fahrenheit—about as high a temperature as can be obtained in filling a flask with boiling water) to no lower than 50° C. (122° F.—about the temperature of most "hot" tap-water) after 24 hours' standing. Under normal use conditions, this is quite adequate.

The disadvantage of the vacuum-type bottles is their vulnerability to breakage. The outside metal or fiber cases do afford some protection to the fragile glass inside, and some further protection is gained by the use of springs inside the shells to cut down shock. But nevertheless, vacuum bottles break when dropped, especially when they are full; and sometimes they break when the glass inside is subjected to a sudden temperature change.

To overcome this disadvantage, unbreakable non-vacuum insulating bottles have been produced. These have a metal inside compartment, packed around with insulating material, and with a metal outer shell. The disadvantages of this type of container probably outweigh its advantages: it has a relatively low thermal efficiency (government specifications stipulate 18 instead of 24 hours for the drop from 95° C. to 50° C.); furthermore, they are relatively large, heavy and hard to clean. Only *Stanley*, of the brands tested, was of this construction.

WHEN YOU BUY

Before you buy a vacuum bottle, have the salesman take it apart to make sure that the inner bottle can be removed without the use of a pipe-

wrench. And while the bottle is dismantled, ascertain that the seal tip of the glass filler is intact, and that the case is metal, either lacquered or otherwise protected from corrosion. It's advisable to check (an easy way is with a small horseshoe magnet) to make sure that the top section of the bottle, at the neck, is not made of steel, as some are. Much better at this point is aluminum or zinc, for they will not corrode or rust, as steel does, when the section gets wet. Make sure, too, when you buy your vacuum bottle, that the cork is included. About half the bottles purchased by CU were minus this essential item.

It may pay you to do a little shopping around in different stores. CU found that prices on a given bottle varied widely from place to place; on the *Thermos* bottles the spread was from 98¢ to \$1.75 in different stores. In general, lowest prices were found at mail-order and department stores; prices were highest at neighborhood hardware stores.

CARE OF VACUUM BOTTLES

The fragility of the glass fillers in vacuum bottles requires that they be handled with reasonable care if they are to last. Dropping and sudden jars should, of course, be avoided. It is inadvisable to pour very hot liquid into a flask that is very cold, or to pour an iced drink into it immediately after it has been emptied of a hot one. It is best to warm or cool the bottle before it is filled, using warm or cold tap water as the temperature regulator. Refill glass bottles are available for *Thermos* flasks, but they do not fit other brands.

The glass container of the vacuum bottle should, of course, be kept scrupulously clean. If possible, it

should be rinsed immediately after use. Later it should be washed out with warm, soapy water and a bottle-brush, and rinsed with clear water. The cork should be treated in the same way. It is advisable, occasionally to supplement the regular washing with soaking of both cork and bottle in a solution of washing soda or baking soda. In cleansing, it should be noted that reference is made to the glass bottle portion. Never submerge the entire assembly in liquid, and take care not to spill liquids over its side when filling or rinsing.

Despite such care, liquid does occasionally seep into the space between the shell and the filler, and you should take the bottle apart occasionally to minimize the damage this may cause. This is done simply by unscrewing the metal protective neck. If the screw threads stick, the probability is that they have corroded, or that some of the liquid has dried between them, and "frozen" them together. Don't bang the flask against a hard surface or use tools if this should happen. Instead, encircle the neck with a thin pad of steel wool, and use this as a non-skid grip. Once you have the bottle apart, clean the screw-threads carefully, dry them, and lubricate them with a very small amount of petroleum jelly (such as *Vaseline*).

A vacuum bottle that is used daily should be washed as soon as it gets home, then stored uncorked until the next filling. If you use the flask only occasionally, see that both bottle and cork are thoroughly dry before the bottle is closed and stored.

HOW CU TESTED

While only six brand names appeared on the 22 bottles tested by CU, there were major differences in appearance, size, weight, capacity and material in almost every brand. The ratings are therefore based mainly on thermal efficiency—the ability of the bottles to keep liquids hot or cold. Consideration was also given to water-tightness of the shell, lack of which would be indicative of seepage in normal use.

Ratings are in general order of thermal efficiency, but note comments. The prices are for the pint size.

ACCEPTABLE

Thermos (American Thermos Bottle Co., Norwich, Conn.). 98¢ to \$1.75. All bottles of this brand exceeded government specifications for heat re-

tention. Best in water-tightness of shell. Variable in construction: fiber or steel shells, plastic or aluminum caps. Capacity 13¼ to 15 ounces. Available nationally, including mail-order houses.

Hy-Lo (Aladdin Industries, Inc., Chicago). \$1.25 to \$1.39. All bottles met government specifications for heat retention. Satisfactory in water-tightness of shell. Steel shells, plastic caps; zinc or aluminum necks. Capacity 14 to 15 oz.

NOT ACCEPTABLE

St. Regis (Manufacturer not stated, but trade-mark appeared to be that of the manufacturers of the **Landers** and **Universal** [below], and filler appeared to be identical with those used on latter brands). \$1.19. Satisfactory in heat retention, but shell of cardboard, and neck of molded tar and cloth composition. Tar smell permeated cork and glass cap.

Landers and Universal (Landers, Ferry and Clark, New Britain, Conn.). \$1.19 to \$1.79. Two brands, apparently identical. Averaged below government specifications for heat retention. Excessive leakage in water-tightness tests. Variable in construction: steel, aluminum or fiber shells; aluminum or plastic caps. Easily-rusting steel collars. Capacity 14¼ to 15 ounces.

Stanley Super-Vac (Landers, Ferry and Clark). \$4.85. Not a vacuum bottle, but heat-retainer of insulation type. Unbreakable. Steel shell over aluminum inner bottle. Aluminum cap and exterior neck. Space between shell and inner bottle filled with insulator and partially evacuated. Falls below government specifications for heat retention, even for non-vacuum bottles. Excessively large, heavy and expensive. Required special cork. Construction of neck poor; difficult to keep clean.



The glass-lined vacuum bottle is better able to retain heat or cold than . . .



. . . the insulation-type bottle, shown above, as it appears when cut apart.

Sanitary Pads and Tampons

Ratings and comparisons of leading brands

There has been very little change in the construction and absorption features of sanitary napkins since CU last reported on them in October, 1943. And the dollars-and-cents price ceilings set for them by OPA have succeeded in holding their prices down, even in the face of skyrocketing prices on many other items. "Something new" has, however, been added to some brands. This consists of a "sealed in" deodorant, presumably to do away with one of the major objections to the use of pads in general, as opposed to the relatively odorless tampons. CU tested absorptiveness and checked construction on 38 widely-sold brands of sanitary napkins and seven tampons, but no attempt was made to evaluate their deodorant properties.

CONSTRUCTION OF PADS

Although there are many variations and modifications, the basic constructions used in sanitary napkins are three:

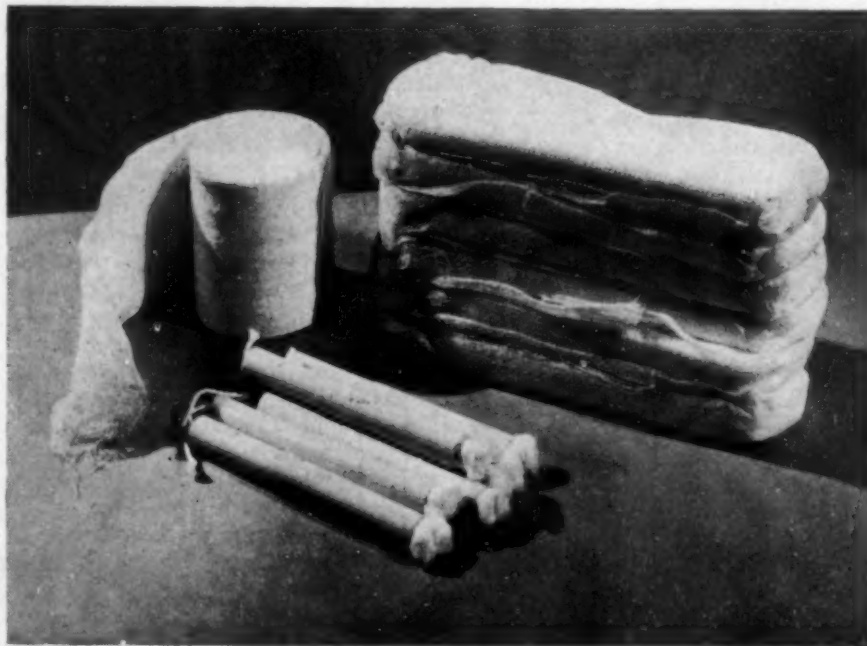
1. Absorbent pads, backed or partially wrapped with water-repellent material.
2. Pads without water-repellent backing, with either absorbent paper or cellulose filler.
3. Pads made entirely of absorbent cotton.

Constructions within these types differ: some pads are considerably larger and bulkier than others; some have tapered ends; some have other "special features," claimed to add to efficiency and comfort.

Tests show that for greatest efficiency, pads should be so made that they contain a highly-absorbent filler (for maximum absorption) and a water-repellent backing (to delay staining through). Pads made entirely of absorbent paper or cellulose without water-resistant backing generally have low absorptive capacity; pads made entirely of cotton are generally satisfactory in the amount of liquid they will absorb, but they tend to strike through too quickly.

Each pad was fastened on a form so designed that the pads were held in the shape and under pressures closely approximating those of actual use. A colored solution approximating menstrual blood in viscosity was allowed to drip, five cubic centimeters (about $\frac{1}{4}$ ounce) at a time, on the surface of the pad. After each drip of liquid, the "limbs" of the figure in which the pad was held were moved in such a way as to simulate walking conditions. This was continued and observation was made of the volume of liquid absorbed before the strike-through point (when a stain was apparent on the underside of the pad), and the volume of liquid the pad would absorb before the liquid began to drip off.

Three or more samples of each brand were tested, and the rating was based on the average of the results so obtained.



A comparison of bulk: six tampons with inserters, six ordinary sanitary pads, and six of the tightly-rolled Curads pads (left). This bandage-style roll is probably designed to compete in compactness with that of the tampons.

Though the labels generally say "easily disposable," this does not mean that sanitary pads can be tossed into the toilet bowl and flushed away. This method of disposing of sanitary napkins is probably the cause of more plumbing troubles than any other. It is much safer to keep a covered container in the bathroom, or to dispose of the pads in the garbage pail.

TAMPONS

There has been much discussion in recent years regarding the relative safety and efficacy of the tampon, as compared with the sanitary pad. A review and opinion on this subject, by one of the country's outstanding gynecologists, will be found on page 246. Here it should suffice to say that tampons are being increasingly used, that many women find them highly satisfactory, and that a growing number of physicians consider them safe for general use.

A substantial percentage of tampon users find them useful for the waning days of the period, but find that a single tampon gives inadequate protection on the first or second day. This is an individual matter. Labels of some tampon brands recommend the use of two at a time during the first days; others suggest supplementing the tampon with a sanitary pad at this period. *Tampax* is made in three sizes: "Super" for "greater

OPA CEILINGS

for Sanitary Pads*

Box of 6	13¢
Box of 8	15¢
Box of 12	22¢
Box of 24	40¢
Box of 48	80¢
Box of 50	84¢
Box of 54	90¢
Box of 60	\$1.00
Box of 66	\$1.10

* Except all-cotton pads, for which no dollars-and-cents ceilings exist.

protection during the day or two of heaviest flow"; "Regular" for "average flow"; "Junior" for "waning days."

Tampons are small cylinders of absorbent material (generally cotton) compressed or crimped to final size. *Meds*, *Tampax* and sometimes *Fibs* are packed with individual cardboard applicators. These considerably facilitate correct insertion.

Tampons were tested with the same solution used in testing sanitary pads. Each weighed tampon was dropped into the test solution, allowed to become thoroughly saturated, then lifted out, drained for a measured time, and re-weighed. This gave a comparable figure for total absorption, used in rating.

Sanitary Napkins

ACCEPTABLE

(In estimated order of decreasing absorptive capacity, considering both striking-through and saturation points. Brands near the bottom of the list are suitable only if the normal flow is small, or for the latter days of the period. Prices given are for the largest size box generally available. Figures in parentheses represent cost per dozen pads.)

- Kotex Super** (International Cellucotton Prod. Co., Chicago). 89¢ for 54 pads (19.8¢). Available nationally.
- Sanimac Triple Soft** (R. H. Macy & Co., NYC). 87¢ for 60 pads (17.4¢). Available at Macy's Dep't Store, NYC.
- Macy's Fluff Type** (R. H. Macy & Co.). \$1.02 for 72 pads (17¢). Available at Macy's Dep't Store, NYC.
- Velva-Nap** (San-Nap-Pak Mfg. Co., NYC). 81¢ for 50 pads (19.4¢).
- Venus 8-inch Size** (Venus Corp., NYC). 90¢ for 12 pads. Cotton-filled. Available nationally.
- Gracets Regular Size** (Gimbel Bros., NYC). 63¢ for 50 pads (15¢). Available at Gimbel's Dep't Stores, NYC.

Pittsburgh, Philadelphia and Milwaukee.

Kotex Junior (International Cellucotton Co.). 22¢ for 12 pads. Available nationally.

Bestnaps (Whelan Drug Co., NYC). 19¢ for 12 pads. Available nationally at Whelan Drug Stores.

San-Aid (Whelan Drug Co.). 39¢ for 24 pads (19.5¢). Available nationally at Whelan Drug Stores.

Sanimac Regular Size (R. H. Macy & Co.). 69¢ for 48 pads (17.3¢). Available at Macy's Dep't Store, NYC.

Altest (Bon Marche, Seattle). \$1 for 66 pads (18.2¢). Available at the Bon Marche Store, Seattle.

Modess Regular Size (Personal Products Corp., Milltown, N. J.). 89¢ for 56 pads (19.1¢). Available nationally.

C.M.O. Fluff Type Cat. No.—33B1 (Chicago Mail Order Co., Chicago). 98¢ for 84 pads (14¢). Available by mail order.

Filene's Number 12 (William Filene's Sons, Boston). 98¢ for 72 pads (16.3¢). Available at Filene's Dep't Store, Boston.

Blue Diamond Fluff (Hearn's, NYC). 78¢ for 50 pads (18.7¢). Available at Hearn's Dep't Store, NYC.

Iris (Sitroux Co., NYC). 19¢ for 12 pads. Available nationally.

San-Nap-Pak Regular Size (San-Nap-Pak Manufacturing Co., NYC). 81¢ for 50 pads (19.4¢).

Kotex Regular Size (International Cellucotton Prod. Co.). 89¢ for 54 pads (19.8¢). Available nationally.

Wards Super Soft Cat. No.—4733 (Montgomery Ward). 89¢ for 72 pads (14.8¢). Available by mail order.

Aimcee (Associated Merchandising Corp.). 83¢ for 50 pads (19.9¢). Available at A.M.C. Stores.

Dixie Belle (Acme Cotton Products Co., NYC). 20¢ for 12 pads. Cotton-filled. Spotty national distribution.

Cellu-Fluffs Cat. No.—5570 (Sears, Roebuck). 59¢ for 50 pads (14.2¢). Available by mail order.

Redi-Pak Fluff Type (W. T. Grant, NYC). 14¢ for 12 pads. Available nationally at Grant Stores.

Nappettes Fluff (Liggett Drug Co., NYC). 73¢ for 56 pads (15.6¢). Available nationally at Liggett and Owl Drug Stores.

Gracets Fluff (Gimbel Bros.). 98¢ for 72 pads (16.3¢). Available at Gimbel's Dep't Stores in NYC, Pittsburgh, Philadelphia and Milwaukee.

Lotus De Luxe Fluff Style (Sitroux Co.). 10¢ for 6 pads (20¢). Available nationally.

Modess Junior Size (Personal Products Corp.). 22¢ for 12 pads. Available nationally.

Veldown (International Cellucotton Prod. Co.). 84¢ for 60 pads (16.7¢). Available nationally.

Cashmere (F. W. Woolworth, NYC).

30¢ for 20 pads (18¢). Available nationally at Woolworth Stores.

Cellu-Ettes Layer Type, Cat. No.—5575 (Sears, Roebuck). 59¢ for 50 pads (14.2¢). Available by mail order.

Hudson's (J. L. Hudson Co., Detroit). 79¢ for 50 pads (19¢). Available at Hudson's Dep't Store, Detroit.

Curads (Kendall Mills, Walpole, Mass.). 33¢ for 6 pads (66¢). Cotton-filled; compressed and packed bandage-style (see illustration). Available nationally.

Iris Junior Size (Sitroux Co.). 10¢ for 8 pads (15¢). Available nationally.

Mayfair Layer Type (Gimbel Bros.). 63¢ for 50 pads (15¢). Available at

TAMPONS VS. PADS

The question of whether and when it is safe to use tampons in place of the traditional sanitary napkins has been debated in the medical journals and among women. Though the percentage of tampon sales is still relatively small in terms of the sanitary napkin market, there can be no question about its rapid growth, as more and more women take advantage of the greater comfort of the internally-worn protection.

With the passage of time, and with the results of long series of experiments now available, more and more gynecologists and other medical men are beginning to advocate tampon usage for the majority of women. Some of them—such as Dr. Robert L. Dickinson, whose article on the subject appears in the medical section of the *Reports*—are convinced that tampons should be used in preference to pads by the average woman. Others consider it a matter of personal choice. And a few still remain unconvinced.

In testing tampons, CU rated them solely on the basis of total absorption. It seems probable, however, that there may be other considerations of importance in determining their suitability. We recommend, therefore, that if you wish to use tampons, you purchase small-size boxes, and experiment with the various brands, until you find one which best suits your needs. You may find it most convenient to use two types, one at the beginning and a different one during the latter part of the period.

Gimbel's Dep't Stores, NYC, Pittsburgh, Philadelphia and Milwaukee.
Faircrest (The Fair, Chicago). 20¢ for 12 pads. Available at The Fair Dep't Store, Chicago.

Pen-co-nap (J. C. Penney Co., NYC). 20¢ for 12 pads. Available nationally at Penney Stores.

C.M.O. Layer Type, Cat. No.—33B2 (Chicago Mail Order Co.). 98¢ for 84 pads (14¢). Available by mail order.

NOT ACCEPTABLE

Fems (Hospital Specialty Co., Cleveland). 19¢ for 12 pads. Inadequate absorptive capacity.

Tampons

ACCEPTABLE

(In order of decreasing total absorption)

Meds (Personal Products Corp.). 65¢ for 40 tampons (19.5¢). Packed with applicators. Available nationally.

Tampax Super (Tampax, Inc., Palmer, Mass.). 98¢ for 40 tampons (29.4¢). Packed with applicators. Available nationally.

Tampax Regular (Tampax, Inc.). 98¢ for 40 tampons (29.4¢). Packed with applicators. Available nationally.

Tampax Junior (Tampax, Inc.). 98¢ for 40 tampons (29.4¢). Packed with applicators. Available nationally.

Holly-Pax (Universal Cotton Prod. Corp., Hollywood). 59¢ for 48 tampons (14.7¢). Available nationally.

Wix (Universal Cotton Prod. Corp.). 45¢ for 12 tampons. Available nationally.

Fibs (International Cellucotton Prod. Corp.). 20¢ for 12 tampons. Sold with or without applicators. Available nationally.



Sugar Syrups

... containing mainly corn sugar for sweetening, are useful to stretch the sugar ration. Here CU rates nine popular brands

There is no immediate relief in sight for the sugar shortage, and the most optimistic predictions are that rations of this valuable commodity will continue to be short for at least another year. But though it's not possible to get more cane sugar, it is quite possible to make its absence less felt on the family dinner table.

One way to do this is through the judicious use of sugar syrups, sold commercially under a variety of brand names and types. The most generally useful for cooking, baking, canning and jelly-making are the "crystal-white syrups," most of which are made up of corn sugar, cane sugar and water, with perhaps some vanilla and salt for flavoring. CU analyzed ten such syrups, and found large differences in composition and economy among them.

It should be said at the outset that the purchase of these syrups does not represent an economy in cooking. As a matter of fact, considering the water they contain, the sugars in them may cost from 18¢ to 34¢ a pound. But if your ration of ordinary sugar does not suffice for canning as well as regular cooking, use of the syrups may be good economy despite their high price.

The labels on the syrup bottles are not very informative; they give a listing of ingredients, without any indication of the amounts of each present. In the brands tested, the total sugar content ranged from 30.5% in *Crystal White Brand* to 50% in *Sweetose*. Analysis showed that in every case most of the sugar present was corn sugar, which is less sweet than cane sugar. The percentage of cane sugar varied from virtually none in *Staley's* to 4.5% in *Karo Crystal White*. Even this small amount of cane sugar appears to have value. Cooking and tasting experiments demonstrate the need for at least a small amount of cane sugar for most fruit dishes.

According to *Consumers Guide*, a publication of the U. S. Department of Agriculture, white syrups may be safely used to replace up to one-third of the sugar in the canning of fruit; in making jams or preserves, one-

fourth of the sugar may be replaced with syrup. Some home canners who have experimented with the syrups, report that they are able to use a much higher percentage of syrup than the Department of Agriculture recommends. Some recipes for fruit canning involving the use of syrups will be found in the *Reports*, for July 1945.

And of course if you've used part of the family's table-sugar allotment to finish off your canning, you'll be glad to find table syrups well suited to cooking. In most recipes, syrup may be used to replace sugar about cup for cup, with the liquid ingredients reduced by about one-third to compensate for the added water. Or, if you prefer not to experiment, you can get special recipes calling for syrup as a sugar substitute from the manufacturers of the syrups.

COMPOSITION

One point to remember in making syrup-for-sugar substitutions is that the finished product will not be quite as sweet as if sugar alone had been used. For, though the commercial syrups contain only about 25%



They may look the same, but *Staley's* (left) contains more than half again as much sugar as *Crystal White Brand* (right).

water, the remainder is not all dextrose, maltose (the sugars present in corn syrup) and sucrose (ordinary cane sugar). In the process of converting corn starch to corn syrup, three products are formed—the sugars dextrose and maltose, and an intermediate product, dextrin. This dextrin—a bland, practically flavorless product, high in energy value—may comprise as much as 50% of the mixture. Further to detract from the sweetening power of the corn syrup is the fact that the two sugars it contains are themselves less sweet than sucrose. The sweetening power of dextrose is only about 75%; that of maltose, about 50% as compared with sugar.

In the ratings which follow, the syrups are listed in estimated order of quality, based on total sugar content and cane sugar content. Figures in parentheses give the approximate cost per pound of sugar of each brand.

BEST BUYS

- Staley's Crystal White (A. E. Staley Mfg. Co., Decatur, Ill.). 13¢ for 1½ lb. (18¢). Available nationally.
- IGA Crystal White Table (Independent Grocers' Alliance Distributing Co., Chicago). 41¢ for 5 lb. (19¢). Available nationally at IGA Stores.
- Sweetose Crystal White (A. E. Staley Mfg. Co.). 15¢ for 1½ lb. (20¢). Available nationally.

ACCEPTABLE

(In estimated order of quality)

- Sweetose Crystal White (see "Best Buys").
- Staley's Crystal White (see "Best Buys").
- Karo Crystal White (Corn Products Refining Co., Argo, Ill.). 18¢ for 1½ lb. (31.5¢). Available nationally.
- Clover Farm Crystal White (Clover Farm Stores Corp., Cleveland). 15¢ for 1½ lb. (23¢). Available east of the Rockies at Clover Farm Stores.
- Pennant Crystal White (Union Starch and Refining Co., Columbus, Ind.). 12¢ for 1½ lb. (20¢).
- IGA Crystal White Table (see "Best Buys").
- Quaker Maid Crystal White (Atlantic Syrup Refining Co., Philadelphia). 15¢ for 1½ lb. (29¢). Available on East Coast, N.Y. to Ga.
- Turkey Crystal White Table (J. Stromeyer Co., Philadelphia). 14¢ for 1½ lb. (32¢).
- Topmost Crystal White (General Grocer Co., St. Louis). 16¢ for 1½ lb. (34¢). Available in St. Louis.
- Crystal White Brand (D. B. Scully Syrup Co., Chicago). 15¢ for 1½ lb. (33¢).

TOMATO CATSUP

Ratings, based on U.S. Department of Agriculture tests, of 39 leading brands of America's favorite relish

There's a standing argument among food connoisseurs on the subject of catsup. One side maintains that the spicy sauce is nothing more than a mask, to disguise poor cooking. The other side holds as strongly that, be the cooking good, bad or indifferent, a dash of catsup is just the thing many foods need to give them zest. A good percentage of the American people apparently belong to the latter school, for the fact is that catsup—or ketchup, if you prefer—is probably our most popular relish.

The United States Department of Agriculture defines catsup as "the concentrated product made from the pulp and juice of red, ripe tomatoes, with the addition of vinegar, salt, spices and other seasonings, sugar and/or dextrose." The manufacturing process is fairly simple, and much of the catsup on the market—29 of the 39 brands tested for CU by government graders—was up to Grade A specifications so far as the scoring factors (color, consistency, flavor and absence of defects) are concerned.

THE MOLD PROBLEM

The big problem in the preparation of the product appears to be mold. Only half the brands tested met specifications in this respect. Careful packers use tomatoes at the peak of maturity—not overmature—and have them carefully inspected, with bad spots trimmed out, to minimize possible entrance of mold into the product. After that, care must be taken during every stage of manufacture, for only through highly sanitary handling can the product be kept relatively mold-free.

It is not practicable for even the most conscientious packer to keep his product entirely mold-free, however. Sometimes there is mold growth beneath the tomatoes' surfaces, which can be detected only by microscopic examination of the fruit. Because of the difficulties encountered in mold elimination, the Department of Agriculture standards regarding mold in

tomato catsup are relatively liberal: in a standard examination, up to 40% of the microscopic fields examined may contain mold fragments without the product's being penalized as "off-grade." A higher percentage indicates carelessness in picking, transporting, sorting, storing or packing the tomatoes.

Once packed, tomato catsup will stand for an indefinite time without spoiling, even after the bottle has been opened. This is a result of the preservative action of the spices and vinegar it contains. Formerly, benzoate of soda was added to catsup as a further preservative, but this has now been outlawed by the Food & Drug Administration's definition. The addition of such a preservative is unnecessary in a good product; its presence may disguise a bad one.

In the bottling of catsup, care must be taken to see that it does not come into contact with iron at any stage. Any iron tends to react with the tannin present in the catsup spices, forming a black compound (iron tannate). Unless the cap of the bottle is adequately protected (usually with a cork disc plus a lacquered paper disc); the catsup will turn dark. Such darkened catsup is not harmful, but it is rather unappetizing.

Thirty-nine brands, in most cases three bottles of each brand, were examined for CU by graders in the U. S. Department of Agriculture. Color, consistency, flavor and absence of defects were given equal weighting in the final score. In addition, tests were made for specific gravity (to show the amount of solid material present) and for mold count. Brands which were substandard in these latter respects are noted in the ratings.

In the ratings which follow, brands are in order of grade score within each group, but note comments with respect to mold counts. All prices are for 14-ounce bottles (standard for catsup). Unless otherwise noted, three or more bottles of each brand were tested.

CONTINUED NEXT PAGE

BEST BUYS

Finest Fancy Ketchup (First National Stores, Somerville, Mass.). 15¢. Grade A. Available in N. Y. and New England at First National Stores.

Bohack's Tomato Ketchup (H. C. Bohack Co., Brooklyn, N.Y.). 15¢. Grade A. Available in Brooklyn and Long Island at Bohack Stores.

American Home Fancy Catsup (National Tea Co., Chicago). 16¢. Grade A. Available in Chicago.

Asco Tomato Catsup or Asco Hot Tomato Catsup (American Stores Co., Philadelphia). 16¢. Grade A. Available nationally at American Stores.

ACCEPTABLE

(In order of average score)

GRADE A

Finest Fancy Ketchup (see "Best Buys").

Bohack's Tomato Ketchup (see "Best Buys").

American Home Fancy Catsup (see "Best Buys").

Snider's Vita-Fresh Catsup (Birds Eye-Snyder, Inc., NYC). 20¢.

Kuner's Ketchup (Kuner-Empson Co., Brighton, Colo.). 23¢. Available in the Midwest.

Sweet Life Tomato Catsup (Sweet Life Food Corp., Brooklyn, N. Y.). 27¢. Available in N. Y. and Pittsburgh, Penna.

Asco Tomato Catsup or Asco Hot Tomato Catsup (see "Best Buys").

Libby's Tomato Catchup (Libby, McNeill & Libby, Chicago). 22¢. Available nationally.

Overland Tomato Catsup (S. S. Pierce Co., Boston). 18¢. Available in New England.

Co-op Grade A Tomato Catsup (National Co-operatives, Inc., Chicago). 18¢. Available nationally at Co-op Stores.

Ecco Tomato Ketchup (Economy Grocery Stores, Boston). 15¢. Available in Conn. and Mass. at Economy Grocery Stores and Stop and Shop Supermarkets.

Elm Farm Tomato Ketchup (Elm Farm Foods Co., Boston). 16¢. Only two bottles tested. Available in New England except N. H. and Vt.

Heinz Tomato Ketchup (H. J. Heinz Co., Pittsburgh). 22¢. Available nationally.

Ritter Tabasco Flavored Catsup, U. S. Grade A Fancy (P. J. Ritter Co., Bridgeton, N. J.). 25¢.

White Rose Catsup (Seeman Bros., Inc., NYC). 22¢. Available on the East Coast, and in Calif. and some Midwest States.

Come Again Catsup (National Tea Co., Chicago). 14¢.

S and W Tomato Catsup (S and W Fine Foods, Inc., San Francisco). 21¢. Available nationally.

Pride of the Farm Tomato Catsup (E. Pritchard, Inc., Bridgeton, N. J.). 19¢.

Available on the East Coast and in the South.

Lily White Tomato Catsup (R. H. Macy & Co., NYC). 17¢. Available at Macy's Dep't Store, NYC.

The following brands had Grade A scores, but one out of three bottles tested was off-grade because of high mold count:

Hurff Tomato Catsup (Edgar F. Hurff, Swedesboro, N. J.). 19¢. Available nationally.

Crosse & Blackwell Fancy Tomato Ketchup (Crosse & Blackwell Co., Baltimore). 23¢. Available nationally.

Del Monte Tomato Catsup (California Packing Corp., San Francisco). 23¢. Available nationally.

Richelieu Tomato Catsup (Sprague Warner Division, Sprague Warner-Kenny Corp., Chicago). 21¢. Available nationally.

Stokely's Finest Tomato Catsup (Stokely Bros. & Co., Indianapolis). 22¢. Available nationally.

Premier Tomato Catsup (Francis H. Leggett & Co., NYC). 23¢. One of two bottles tested had high mold count. Available East of the Mississippi and in Texas.

GRADE C

Lee Tomato Catsup (H. D. Lee Mercantile Co., Kansas City, Mo.). 22¢.

Royal Scarlet Tomato Catsup (R. C. Williams & Co., NYC). 24¢.

Fruitidor Tomato Ketchup (L. Bamberger & Co., Newark, N. J.). 20¢.

Yellowstone Tomato Catsup (Paxton & Gallagher Co., Omaha, Nebr.). 21¢. One of three bottles had high mold count.

Jersey Tomato Catsup (Jersey Canning Co., Swedesboro, N. J.). 25¢.

Plainville Tomato Catsup (Vincennes Packing Corp., Vincennes, Ind.). 21¢. One of three bottles had high mold count.

Two or more bottles of those examined in the following brands had excessive mold count:

Red Wing Fancy Tomato Catsup (Red Wing Co., Fredonia, N. Y.). 22¢. Grade A score.

Bernice Tomato Catsup (Krasne Bros., NYC). 23¢. Grade A score.

Krasdale Deluxe Tomato Catsup (A. Krasne, Inc., NYC). Grade A. Available in NYC.

Blue Label Ketchup (Curtice Bros. Co., Rochester, N. Y.). 18¢. Grade A score.

Blossom Tomato Catsup (Sprague Warner & Co.). 23¢. Grade C score.

Freshpak Tomato Catsup (Grand Union Co., NYC). 14¢. Grade C score.

NOT ACCEPTABLE

Lyndale Tomato Catsup (Greenspan Bros. Co., Perth Amboy, N. J.). 22¢. Two bottles off-grade for consistency, and all three off-grade because of low specific gravity.

Dellford Ketchup (Middendorf & Rohrs, NYC). 15¢. Two bottles tested off-grade for color.

VEGETABLE & FRUIT JUICES

A survey of the "health juices" and other miscellaneous juices to be found on the store shelves

The old standbys in fruit juice—grapefruit, orange, pineapple, prune and tomato—have been supplemented in recent years by a variety of new fruit and vegetable juices. Many of the vegetable juices—spinach and carrot, for example—had their origins in the "health food" stores, where they were built up on the basis of nutritional claims. More recently, these "health juices," along with a variety of new types, have reached grocery store shelves. Most of these make no special claim to health-giving properties.

TASTE TESTS

To find how these products appeal to consumers, CU shoppers rounded up 14 different varieties of fruit and vegetable juices, and CU technicians put them through a series of "blind-fold" taste tests, using a "taste squad" of 12 staff members. No attempt was made to cover the field so far as brands were concerned; rather, the purpose was to test available juice varieties to find general taste reaction to these types.

In general, the reaction was highly negative to the health-type drinks: carrot, beet, spinach and fig. Reactions to other types varied, and in some cases there were marked brand preferences.

FRUIT JUICES

On the whole, fruit juices were rated as more satisfactory than the vegetable juices, partly, perhaps, because many of them were sweetened. It should be noted in this connection that, whether the sweetness comes from the fruit itself, or whether it is added in the form of cane sugar or

corn sugar, a sweet fruit drink has a high caloric value. And if you're using a sweet fruit drink on a "reducing diet" to satisfy your craving for sweets, you might as well have that much-desired piece of candy; your caloric-intake won't notice the difference.

Many tasters considered most of the fruit drinks over-sweet for straight drinking, but suggested their use in gelatin desserts, jelly, pudding sauce or punch, as a substitute for cake icing, or diluted with water. Here is how the fruit juices rated, type by type:

FIG: Two brands tested. Considered generally poor.

GRAPE: Four brands tested. Three (*Grisdale, American Home, Red Wing*) good; one fair.

PEAR: Three brands tested. One (*Libby's*) good; one fair; one poor.

APRICOT: Three brands tested. One (*Here's Health*) good; one fair; one poor.

PEACH: Two brands tested; one (*Heart's Delight*) good; one poor.

LOGANBERRY: Two brands tested. One (*Libby's*) good; one poor.

CRANBERRY: One brand (*Ocean Spray*) tested; good.

BLACK CHERRY: One brand tested; fair.

POMEGRANATE: One brand tested; poor.

VEGETABLE JUICES

On the whole, the vegetable juices fared more poorly than the fruit juices in the judgment of the tasters. Only one variety—mixed vegetable juices—which relied heavily on tomato for flavor, was rated generally good. Carrot, spinach, beet and sauerkraut were found generally poor. You might find some of these juices useful as a flavoring for soups, aspics or potted meats, however.

Type by type, the panel's judgment was as follows:

CARROT: Five brands tested. All poor. Tasters considered them too sweet in some brands; in others they objected to the bitter after-taste indicating the use of too-old carrots.

SPINACH: One brand tested; poor.

SAUERKRAUT: Two brands tested. One fair; one poor.

MIXED VEGETABLE JUICES: Nine brands tested. These consisted of a mixture of four to eight vegetable juices, usually including tomato, celery, carrot and parsley, often with the addition of other types. Because many of the brands are widely available, and because tasters found them generally good, more extensive taste tests were conducted on these mixed juices than on the other types.

In the following ratings, brands are listed in order of decreasing taste scores. Figures in parentheses represent the cost of a four-ounce serving.

Eveready Vegetable Juice Cocktail (Barron-Gray Packing Co., San Jose, Calif.). 16¢ for 1 pt. 2 fl. oz. (3.4¢). Tomato, carrot, celery, parsley. Available nationally.

Here's Health Vegetable Juice Cocktail (Barron-Gray Packing Co.). 17¢ for 1 pt. 2 fl. oz. (3.7¢). Tomato, carrot, celery, parsley. Available nationally.

Lily White Vegetable Juice Cocktail

(R. H. Macy & Co., NYC). 19¢ for 1 pt. 2 fl. oz. (4.2¢). Tomato, carrot, celery, parsley. Available at Macy's Dept. Store, NYC.

White Rose Vegetable Juice Cocktail (Seeman Bros., Inc., NYC). 15¢ for 15 fl. oz. (4¢). Tomato, carrot, celery, parsley. Available nationally.

Vegamato Juice Cocktail (Lachoy Food Products, Inc., Archbold, Ohio). 15¢ for 1 pt. 2 fl. oz. (3.3¢). Tomato, carrot, celery, spinach, parsley, sweet green pepper, lemon. Available in North Central States.

V-8 Cocktail Vegetable Juices (Standard Brands, Inc., NYC). 15¢ for 1 pt. 2 fl. oz. (3.3¢). Tomato, celery, carrot, parsley, lettuce, beet, spinach, watercress. Available nationally.

Sweet Life Vegetable Cocktail (Sweet Life Food Corp., Brooklyn, N. Y.). 18¢ for 1 pt. (4.5¢). Tomato puree, water, celery, carrots, spinach, beets, parsley, watercress, lettuce. Available in Brooklyn.

Sun-Rite Vegetable Juice Cocktail (Sun Ripe Products Co., Chicago). 5¢ for 12 fl. oz. (1.7¢). Tomato puree, water, celery, carrots, spinach, beets, parsley, watercress, lettuce.

Rolle Vegetable Juices Cocktail (Rolle Vegetable Juices, Inc., Chicago). 16¢ for 1 pt. 2 fl. oz. (3.4¢). Tomato, celery, spinach, parsley.

COST AND FOOD VALUE

The prices of the variety fruit juices run rather high—from about 4¢ to 14¢ for a four-ounce serving in the brands tested. Nor do you get a great deal of nutritive value for your money. Grapefruit juice, which sells generally for the equivalent of 3¢ to 4¢ a four-ounce serving, is not only cheaper but it contains a great deal more vitamin C, the main nutritional contribution of fruit juices.

Most of the vegetable juices tested averaged 3¢ to 5¢ for four ounces, as compared with tomato juice, which runs to 2¢ to 3¢ for the same amount. The contribution of these juices to the diet is varied, depending on the vegetables from which they are made. But considering their generally poor flavor (with the exceptions noted above), and their relatively high cost, they are certainly not worth buying in the interest of health. Despite any sales claims to the contrary, the fact is that you can get as much food value—often a great deal more—from eating the vegetable ingredients, raw or cooked. Unless you have a special liking for these products, or unless you are on a liquid diet, CU recommends that you get your vitamins and minerals in a more palatable form.

Watch for . . .

Work on the following reports, among others, is either now under way or scheduled to begin soon:

Electric Irons

Autos

Beer

Lipstick

Vanilla

Oleomargarine

Phonograph Needles

Canned Peaches

Home Dyes

Perfumes

HEALTH AND MEDICINE

HAROLD AARON, M. D., SPECIAL MEDICAL ADVISER

MEDICAL CONSULTANTS: Dr. Anton J. Carlson—Chairman, Dep't of Physiology, University of Chicago; Past President, American Physiological Society; Dr. Theodor Rosebury—Assistant Professor of Bacteriology, College of Physicians & Surgeons, and School of Dental and Oral Surgery, Columbia University; Dr. Marion B. Sulzberger—Ass't Professor of Clinical Dermatology and Syphilology, New York Post-Graduate Medical School, Columbia University; Editor, Journal of Investigative Dermatology.

CU's Medical Consultants give technical advice on matters of medicine which lie within their fields. CU is responsible for all opinions concerning social, economic and public health questions.

TAMPONS as menstrual guards

by Dr. Robert L. Dickinson

The following article is based entirely on a paper, "Tampons as Menstrual Guards," by Dr. Robert Latou Dickinson, which appeared in the June 16, 1945 issue of the Journal of the American Medical Association. For the most part, we have followed closely the language of the original, but in some places it was thought advisable to revise the technical discussion in the interest of clarity to the non-medical reader. Dr. Dickinson has checked all such changes from the original manuscript, to see that they do not detract from the accuracy of the original article.

Month by month, the "curse" hangs over one-seventh of a woman's active life. If strung along in sequent days, the flow would carry on for five full years. Yet of the thirty-five years of menstrual periods, the first six or seven and the last eight or ten are times in which pregnancy is little or not at all to be desired and chiefly to be apprehended. Therefore, one-third of the span of the function is needless fertility, footing up to fifteen years of all but futile vexation. Even with four pregnancies and full nursings, there are still some four hundred periods in which to use some ten guards each—or some four thousand nuisances.

Any venture looking to relief of menstruation deserves unbiased analysis.

For protection against the four or five days of trickle, gush or stain, the customary requirement has been a roll or pad between the thighs, in a cleft so narrow that there is no room for it. With this device, every step in walking produces some degree of triple-surface rubbing, and every jounce when sitting produces upward pressing. These may be unnecessary discomforts, since, in the absence of the napkin, there is rarely contact or pressure of the chair seat against the normally-formed vulva.

OBJECTIONS TO PADS

To the external menstrual guard (sanitary pad) there are several other objections:

1. To-and-fro motion may carry fecal contamination from the anal opening to the urinary and vulvo-vaginal (reproductive) canals, and from the urinary outlet to the vaginal entrance, a process favored by dampness and warmth, to say nothing of surface irritation.

2. This region, like the armpit, is especially endowed with glands which give forth odor, from perspiration and oily secretions; stale blood, urine and leucorrheal discharge may be further factors. Commercial reports show that deodorants are bought with napkins by one-fourth of the buyers in one study, by nearly one-half in another, and by 59.8% in a third. Recently napkins

incorporating a deodorant have appeared on the market. One-fourth of certain tampon users praised their freedom from odor.

3. The support for this surgical dressing calls for some sort of harness or attachment—strap, girdle and buckles—ill-adapted to close-fitting or diaphanous modern clothing.

4. Carriage of unnecessary bulk is a bother; disposal after soiling is a trouble, what with the prohibition on blocking drains. The contrast in bulk between napkins and tampons is striking; box sizes are as seven to one in lots of twelve.

5. Lastly, any external menstrual guard, in addition to applying some degree of heat within a confined space, is responsible for rhythmic play of pressure against surfaces uniquely alert to erotic feeling.

The engineering efficiency—or deficiency—of the sanitary pad calls for study. This bulk is worn to take care of a flow of fluid smaller than is generally appreciated. The total flow averages two to four ounces, which is only up to half a cupful, though there are many individual instances of greater flow.

ABSORPTION ADEQUATE

The capacity for absorption of the average commercial tampon would allow two to four of them to take up the total output. Thus, the use of ten or twelve tampons (the average number of napkins used in a period), at a cost of 12¢ to 36¢, should provide the desirable changes.

Several surveys showed that during the first day of the period—during which possibly half of the total flow generally occurs—between one-tenth and one-fourth of women who habitually use tampons require either a supplementary or a substitute external pad; failing that, they change tampons frequently, or use two at the same time.

A survey made in 1942 showed that 37% of tampon users used home-made products—which may account, in part, for their reported discontinuance. The common commercial tampon is a cotton roll compressed to the size of the last two joints of the little finger; one among them is slightly tapered. Some are provided with a light inserter for placement at any depth by means of a cardboard tube of glazed surface with a cardboard plunger for expulsion of the tampon into the vagina. Some brands are made of cotton

linters, or of crepe paper, held in a net of threads. All are provided with a waterproof string for withdrawal. The length, when compressed, is below two inches; the diameter runs from $\frac{1}{2}$ to $\frac{9}{16}$ inch. It is to be noted that the posterior vaginal wall, along which the tampon is properly placed, averages $3\frac{1}{2}$ inches in length, while the breadth of the vagina at its upper section (the widest portion), undilated, averages $2\frac{1}{2}$ inches.

The anatomy and the physiology of the feminine reproductive tract are somewhat complex, and the subject of misapprehensions, even among physicians. But the fact is that the vagina is so shaped and so located that a properly-inserted tampon has adequate space (lying, as it does, on the horizontal floor of the vagina) and support (from the loop of muscles) to be quite comfortable, without the possibility of slipping out. The comfort factor is aided by the fact that the sensory nerve fibers in the portion of the vagina in which it lies are largely non-existent. The erotic stimulus of the stationary internal tampon should be, therefore, negligible as compared with that of the moving pressures of the external pad.

DIFFICULTY IN INSERTION

Under certain circumstances, there may be difficulty encountered in the insertion of the tampon, particularly the first few times. The hymen may, at first touch, be tender like the lining of the eyelid, but it is unlike the conjunctiva in that it can become as tolerant as the mucous lining of the mouth and its lips. With douching, gentle stretching or good lubrication of the tampon tip, insertion can always be accomplished without any nick or damage, even to the intact hymen. Chiefly in the hypersensitive, or in the rare, thick, rigid form, or in the somewhat infrequent sub-standard opening is this course needed. The muscles just within the hymen may resist entrance because of a reflex due to apprehension of hurt. There is wide variation here as in all other muscles, for these muscle slings are especially thick and tense in tennis addicts and horsewomen, but any spasm disappears with patient avoidance of urgency. A good educator is the douche.

There are some physiological considerations which may bar the use of the tampon. Unrepaired injuries of labor and sagging vaginal walls may

A Note on the Author . . .

Dr. Robert Latou Dickinson, author of this article, has been prominent in the field of gynecology for many years. He has published over two hundred research papers and reports on various phases of obstetrics, diseases of women, sex problems and hospital organization, as well as a number of books. Dr. Dickinson's illustrations of his works have made a major contribution to the easy understanding of human anatomy; his research and writing have made him a leader in his specialty.

fail to provide support for the tampon. Cervicitis (inflammation at the lower opening of the womb), frequent among virgins, or tender uterosacral ligaments, or a sensitive bladder base, or a habitually loaded rectum may also exclude habitual tampon usage.

Sales of tampons run to about 10% of the sales of commercial napkins. A continuous survey of 749 drug stores finds an increase all over the country, with 1943 sales about five times those of 1936. A study of 1674 women made in 1940 found one-fourth using tampons, though but few depended on them exclusively, while of the total questioned one-fifth had made no trial and one-seventh had discontinued their use.

Another survey, made in 1944 and covering 2500 women in 26 cities, showed that 24% of them used tampons. Of these, one-third depended exclusively on tampons for protection, and the remaining two-thirds used a supplementary napkin for part of the time. This survey showed use to be about equally distributed between married and unmarried women; the higher the income bracket, the greater was the use of tampons in this survey. The greatest percentage of the women who relied on the use of tampons exclusively was in the 20-24 age bracket. Availability of tampons as menstrual guards was known to 94% of the women interviewed, but nearly one-third were too apprehensive to make a trial, and inertia and satisfaction with the napkin accounted for 43% of non-users. Among the 300 who stopped the use of tampons, discontinuance had been due to discomfort in one-fifth, to defective protection in another one-fifth, and to dislike in one-sixth. Recommendation by friends started use by about one-third; advice by a

doctor was the reason for beginning on the part of 34 out of 900 women, while 11 were stopped in such use by their physicians.

In addition to these, numerous gynecological studies have been made by physicians, covering the use of tampons. On the whole, and in cases where the experiments were well-controlled, the use of tampons as menstrual guards showed no pathological changes in the vast majority of the women studied. In many cases where unsatisfactory results were reported, a close study of the data indicates insufficient attention to the local disability of the patient, or inadequate data on the length of tampon usage.

SUMMARY

Among more than 6500 women reporting on menstrual tampons as recorded in 19 sources in the literature, both medical and commercial, there are series that voice satisfaction ranging around 90%, especially with younger women, educated groups and better incomes. This includes much reliance on interior protection alone, but with some supplement by the external guard at the beginning of the period. One-fifteenth of the bulk thus suffices to absorb the average flow, avoids the harness and chafing, and also minimizes odor. In another group of reports, there is acceptance by one-fourth to one-third, discard being based on discomfort in about the same proportion, and on incompleteness of first-day protection in about one-fourth. Cramps and inflammation appear in less than 1% of users; apprehension about damming back through the uterus finds scant support; inflammation of the Fallopian tubes and serious complications are rare.

NEWS AND INFORMATION

The Power of the Atom

How can it be applied in the future as a tool of peace rather than of destruction?

by Dr. Gerald Wendt

For once the spectacular treatment given by the American press to an achievement of science is not an exaggeration. The atomic bomb dropped at Hiroshima actually was as horrendous, as world-shaking as the newspapers and magazines have been telling us. From a long-time point of view it is, in very fact, difficult to exaggerate its consequences.

Even the fantastic predictions in the field of industry and economics that have been made by amateur newspaper scientists are within the range of possibility—ultimately. But most of them are nonsense if we consider only the next five or ten years—and no industrial or economic prediction is valid beyond that anyway. It is time to consider carefully what atomic power can mean within a reasonable period of time.

TOO MUCH POWER

In its present form the atomic explosive has no peacetime use. It has too much power, it is too concentrated, too fast and too expensive. The terrific atomic disintegration must be slowed down and the materials must become cheaper. This means more research. If the United States could set aside the cost of another nine days of warfare—another two billion dollars—and use that money for another five years of research, then the chances are excellent that the two technical problems could be solved.

The slowing down of the atomic reaction must be complete before it can be used, so that it is at all times under control and so that energy can be generated from it rapidly or slowly as needed. To predict economic consequences we must assume that that will be done. To make the

explosive cheaper is a different problem because the cost will probably come down gradually. The actual cost of the two bombs that we used would appear on the account books as a billion dollars each, if they bear the entire cost of the development. How much the actual cost of each was has not been published, but it is safe to say that it is prohibitive for industrial use. A single bomb is as powerful as 20,000 tons of TNT but one may well suspect that 20,000 tons of TNT are cheaper, and 20,000 tons of coal or gasoline much cheaper. Yet the cost may come down swiftly with further research.

Does the explosive have to be made of uranium? At present, the answer is certainly yes. Even that, however, is no obstacle to cheapness. Before the war, the cost of uranium was about a thousand dollars a pound. By January of 1943, research had reduced that cost to twenty-two dollars a pound, and production was planned at the rate of five hundred pounds per day. And uranium, though a relatively rare metal, is plentiful enough so that known deposits have been estimated as sufficient to supply this country with power for two hundred years. Thus atomic power may become practical for industry even if it is limited to uranium as a raw material.

FIRST PEACETIME USE

If the cost comes down gradually, the first use will be such that more savings are involved than the mere cost of fuel. Atomic power will be used where it pays to use an expensive fuel that is concentrated and relatively weightless. There is great need for such a fuel in aviation. The most serious obstacle to long-

range flight and to cheap flight is the need of carrying thousands of gallons of fuel across the sky. If a thousand gallons—three tons—of fuel can be replaced by a few pounds or ounces of atomic explosive, then the plane either has a much longer range or can carry a much greater pay-load. Therefore the airlines could afford atomic fuel while it is still much more costly than gasoline.

It is easy to guess that the fuel might be provided in the form of a spool of very thin uranium wire which would be fed into the nozzle of a jet engine—assuming always that its rate of decomposition could be controlled. In the jet it would heat a stream of compressed air to a temperature of many thousand degrees, thereby expand the air enormously so that it would roar out of the rear end at high speed and thrust the plane forward.

This could be followed almost at once by a similar engine in which the blast of hot air would be directed at a turbine wheel to convert its power into rotating mechanical power and thus operate the propellers of a large, slow-speed plane. In both the jet plane and the gas turbine engine there would be additional saving of

Prospects for Now

The use of atomic energy for peacetime purposes is a thing of the future. But right now, new products and old ones, some in new dresses, are beginning to find their way back to the market.

CU urges its members to exercise restraint, and not to rush into the market to buy the first available models. The laboratories of Consumers Union and its consultants are already testing electric irons, and other new electrical and mechanical devices will be tested as soon as possible. But it takes time to get the merchandise, and still more time to test it. Consequently, there must be some time lag between the moment the goods appear in the stores, and the time CU is ready to stamp them as "Best Buys," "Acceptable" or "Not Acceptable." Prewar CU subscribers will realize that these evaluations are well worth waiting for; we urge our newer members to do the same, in the interest of getting better goods and of making real savings.

weight because of the small engine-weight needed.

As the atomic fuel became cheaper, its use would expand. The next obvious application would be in gas turbines for the propulsion of ships and for railroad locomotives. In both, the saving of weight and especially of space for boilers, condensers, fuel tanks and accessories would be an important factor in commercial success—and incidentally, in reducing the amount of coal and oil that need to be produced for fuel purposes.

INDUSTRIAL USE

Then, finally, if the cost of the atomic explosive came down to a point where it was less than the cost of coal or oil—not per pound, of course, but per unit of heat—it would be used in large powerhouses for generating electricity, steam and industrial power. It would almost certainly go there first—before it could be used in the kitchen stove or in the automobile cylinder—because it will certainly require a very complicated and delicate operating mechanism. This could be installed and operated by competent engineers. The result would be to save money for large users of power and heat. It would cut the cost of their fuel. However, this would mean no great reduction in the cost of electricity, gas or steam to the small consumer because the major item in the cost of electricity to the consumer is the cost of getting it to him—the cost of installing fixtures, wires and distribution lines. The cost of the fuel itself is a relatively small item. Again, the major effect would be a reduction in the total amount of coal mined.

IT TAKES TIME

These developments are likely to require ten or twenty years so that no one need fear an immediate economic upset. It is impossible to see further ahead, but if atomic power is really tamed, then in the end it will perhaps be available in capsule form to operate power plants on the farm, cheap air-conditioning units in the tropics, furnaces in cold weather and finally, to operate a small turbine engine for propelling the family car. In the end it means cheap power, as cheap perhaps as the water we drink. That will be the age of automatic factories, electronically controlled and atom-powered, an age of plenty in materials and in energy. But by that time the twenty-first century will be here.

CUMULATIVE INDEX

Each issue of the Reports contains this cumulative index of principal subjects covered since publication of the 1945 Buying Guide issue. By supplementing the Buying Guide index with this one, members can quickly locate current material and keep abreast of changes resulting from new tests. Page numbers run consecutively beginning with the January 1945 issue Jan. 1-28; Feb. 29-56; Mar. 57-84; Apr. 85-112; May 113-140; June 141-168; July 169-196; August 197-224; September 225-252.

Reports starred replace or supplement material in the 1945 Buying Guide.

Ammonia	150
Antiperspirants*	100
Arthritis and rheumatism.....	75
Asparagus, canned	121
Atomic power (Wendt).....	248
Autos, postwarl	32
Baking Powder*	120
Beans, canned green.....	12
—canned baked	65
Beets, canned	44
Cartels (Berge & Warne).....	158
Catsup	243
Bleaches	211
Chocolate Drinks*	200
Cigarette rollers	177
Cocoa	200
Coffee-makers	88
"Colds"*	155
Colognes	35
DDT*	228
Diamonds	147
Fatigue*	48
French dressing	123
Frozen food*	46
Fruit drinks	180
Fruit juices*	244
Gardening*	70, 102, 124
Gelatin desserts	93
Headache*	18
Heating*	14, 203, 232
Hosiery, treatment*	64
House cleaning	131
Household oil	206
Housing for veterans.....	21
Housing	208
Income tax	51
Indigestion*	106, 134
Insecticides: DDT*	228
Insurance, GI	217
Juices, fruit and vegetable*.....	244
Ketchup	243
Kitchenware, care*	181
Leg make-up*	146, 175
Mayonnaise	91

Menopause	184
"Menopause," male	213
Mineral oil laxatives*	50, 151, 157
Nose Drops*	60, 77
Oils, Cooking	9
motor, Summer*	144
household	206
Phonograph needles	116
Pudding mixes	93
Radio (Durr)	108, 186
Rheumatism & arthritis	75
Salad dressing	91
Sanitary napkins*	240
Sewing thread	230
Sheets*	7
Shortening	9
Slips, rayon*	4
Soap, laundry*	67
Soups, dehydrated*	42
—jellied	179
Spinach, canned	153
Sulfa drugs	156
Sunburn preventives*	146, 172
Syrups, sugar	242
Tampons*	240, 246
Thermometers	118
"Thermos" bottles	238
Thread, sewing	230
Toilet water	35
Tomato catsup	243
Trichinosis	156
Vacuum bottles	238
Vegetable juices*	244
Winter clothing, shopping.....	250
Woman's slips*	4
Yarn, knitting	95

CONSUMERS UNION

17 UNION SQUARE WEST
NEW YORK 3, N. Y.

I ENCLOSE \$4 FOR WHICH PLEASE

- ☐ Enter my subscription for the Reports (including the Buying Guide issue) and Bread & Butter for one year.
- ☐ Renew my subscription for one year and send me Bread & Butter to run concurrently with the Reports.

I ENCLOSE \$3.50 FOR WHICH PLEASE

- ☐ Enter my subscription for the Reports (including the Buying Guide issue) for one year.
- ☐ Renew my subscription for one year.

NAME

ADDRESS

VCU



FOR SCHOOLS AND YOUTH GROUPS - MEN'S AND WOMEN'S GROUPS - UNIONS AND AUXILIARIES

Susan Brothers, Group Editor

Your Winter Wardrobe

Victory over Japan has brought quick improvement in supplies of many consumer products, but textile items remain scarce, high in price and poor in quality. Nevertheless, it will be necessary for most people to shop for at least a few essential garments for Winter use.

Before you head for the store, however, make sure that you really need all the items on your list. A little repair-work may salvage some of the family's Winter clothing, and tide you through for another season—when it is to be hoped that the situation will be considerably improved.

Even after you've trimmed your list, don't rush out and buy the first thing you see; shop around as much as possible to try to find things which will really suit your needs. Look for clothing that is not so extreme in style that it will soon become out-of-date. Try to buy colors to harmonize with the accessories you already have. Look for adaptable models that can be worn for both work and dress wear. Check carefully on size; badly-fitting clothing looks and wears poorly. Examine the workmanship; stitching at seams, hems and button-holes should be firm, with sufficient allowance of material so that the seams will not pull out. Check on washability and cleaning methods.

The following are some specific suggestions to aid you in buying:

MEN'S AND WOMEN'S CLOTH COATS AND SUITS

FIBER CONTENT: All-wool is best. Mixtures of wool and cotton or wool and rayon do not hold their shape or wear as well; nor do they have as high heat-retention qualities as all-wool. A closely-woven, firm weave is better

than a novelty weave with irregular threads which snag easily.

WARMTH: Several thin layers are warmer than a single heavy one. For maximum warmth it is best, therefore, to have coats interlined, or to wear sweaters or jackets under light-weight coats.

FASTENERS: Too few fasteners or wrongly-placed ones cause discomfort and strain on garments. Slide-fasteners, wherever possible, are the snuggest and most convenient.

LININGS: They should be guaranteed to last the life of the garment. Poor quality or poorly-fitted linings fray, pull out at the seams, and may be uncomfortable. Look for close, even weave.

WOMEN'S DRESSES

Aside from general considerations, such as durability of fabric, resistance to light and cleaning, and good construction details, there are several specific things to look for:

TRIMMING: Make sure that it's color-fast, and that it can be cleaned along with the garment, without the necessity for removal.

SEAMS: There should be a minimum of $\frac{3}{8}$ or $\frac{1}{2}$ inch of fabric at the seam, otherwise the seams will pull out easily.

CLOSINGS: Slide fasteners are now being used and are readily available. They are far more satisfactory than button or snap fasteners.

COMFORT: Avoid styles which do not give freedom of motion. When you try on the dress, try moving your arms in it; try sitting down, to make sure that it isn't the kind that will ride up and make you uncomfortable.

MEN'S FELT HATS

BODY: For best wear, select a hat made of fur felt, and having a firm body and smooth texture. Hats either bound or turned back at the brim edge tend to hold their shape better than raw-edged brimmed hats.

TOP LINING: This should be of cellophane, oiled silk or other water-resistant material, to protect the felt from stains made by oils in the hair.

SWEAT BAND: Its purpose is to keep the hat in shape and to protect the felt from perspiration stains. The band should be of leather, about two inches wide and firmly lock-stitched to the felt.

MEN'S AND BOYS' SHIRTS

MATERIAL: Rayon shirts do not wear as well as cottons, and they need special care in laundering. Look for close, even weave.

SHRINKAGE: Buy shirts labeled "Sanforized," or guaranteed not to shrink more than 2% in washing.

SIZE: Check both neck-size and sleeve length. The correct size assures better wear as well as better appearance and greater comfort.

CONSTRUCTION: The yoke (across the back of the shoulders) should be cut to curve slightly downward from the center to allow freedom of action at the shoulders. There should be pleats or gathers across the entire back or.



at the two sides, below the yoke. The sleeves should be cut so that the thread of the material runs parallel to the crease when the sleeve is laid flat. The sleeve placket should be long enough so that the cuff can be laid flat for ironing. Button and buttonhole panels should run the full length of the shirt, stitched down on both sides, and with no free ends.

THE PRICE OF THINGS

In buying any garment, don't just look at the price tag, but ask yourself, "How much does this really cost?"

PRICE: If possible, compare prices for the same garment at different stores. When they are available, try to get garments made under the OPA-WPB clothing program. Cotton garments made under this program are clearly marked with price-tags, and they are generally of better quality and lower price than other similar garments. Price ceilings are still in force; report violations to your local War Price and Rationing Board.

UPKEEP: Cost of upkeep plays an important part in the total cost of clothing. Garments that need dry-cleaning or special care (sequin or fur trimming, for example) cost more in the long run.

CREDIT: If you buy "on time," be sure to read very carefully all the small print on any contracts you sign, to find out how much you are paying in the form of extra charges. These may be quite substantial.

"SALES": You can often get good buys at bona fide sales, but watch out for those used to unload inferior garments which are not worth even the "reduced" price.

"SECONDS": These are often good buys, but inspect them carefully, to see that the flaws in them are not such as to affect durability or appearance.

CU offers a special reduced subscription rate for groups of five or more persons who subscribe at the same time. Under this arrangement, the yearly subscription fee for the monthly *Reports* (including the annual *Buying Guide* issue) and the weekly *Bread & Butter* is only \$3 a year, instead of the individual rate of \$4.

Next time you renew your subscription, get four or more friends to join with you under the group plan. It will mean a saving of \$1 a year for each of you.

Things to Do Seeing Is Believing

Groups—particularly school groups and women's organizations—can carry out an interesting and educational project on clothing. The objective should be to assemble some "good buys" and some "lemons," to compare them, and to draw conclusions that will help members of the group to make future purchases which are in the "good buy" class.

Here's a suggested outline of procedure:

1. Have group members read the article, "Your Winter Wardrobe," or have one person read it aloud to the group.

2. Ask the members of the group to bring from home at least one garment which turned out to be a good buy, and one which was found to be a "lemon." "Lemons" might include such things as shirts which shrank in washing; dresses which faded in washing; slips which pulled out at the seams; blouses which are too short to stay inside skirt waistbands.

3. Try to borrow—or if individual members need them, buy—from a local store some cotton garments made under the new OPA-WPB clothing program. Men's or boys' shirts and pajamas, women's and girls' dresses and slips are among the items available under this program.

4. Examine the garments as to quality and price, and compare them with garments which are not produced under the program.

5. Hold a general discussion covering the general question of what makes a "good buy." Discuss the problem of how to buy wisely in shortage periods. Define some of the common terms used in garment labeling: "waterproof," "water repellent," "preshrunk," "sanforized," "washable," "colorfast," etc.

Home Repairs

There is still a shortage of consumer durable goods, and it's just as important as ever to take good care of the things you have. Many of them can't be replaced. What's more, it's still difficult to get repairmen. And at any time, you can save time and money by knowing how to do minor repairs on your household equipment.

Your club, school or organization can help by sponsoring a home repair class. Even though you or your friends may not have had any previous experience with screwdriver or pliers, you can learn how to repair broken roller shades; how to mend an electric cord by making an underwriter's knot; how to change a washer in your plumbing system; how to repair and refinish venetian blinds, furniture, and many other articles.

Make plans now for starting a home repair class this Fall. Many are already in operation; Duluth, Minn., has had five different centers going simultaneously in the last two years.

Following is an outline of the steps to be taken in setting up a home repair class or center:

1. Appoint a committee to arrange for a meeting place and to find an instructor.

2. Contact the school principal, the Y.M.C.A., community center, or any other place where a work shop is available and get permission to use the shop.

3. Select as an instructor the manual training teacher or someone else expert in the handling of tools and in repair work. You may be able to find as "guest instructors" some skilled craftsmen (plumber, carpenter, electrician, etc.). Their suggestions would be invaluable.

4. You probably will be able to set the class up at no cost in your local school under the adult education program. However, if any costs should develop, you can meet them by charging a small class registration fee or a small fee for each session.

5. Select a regular meeting time and publicize it through posters, a notice in your local newspaper, and by word of mouth.

6. Invite people in your community to join the class. Get as many people interested as possible, make your home repair class a real community service.

A "Best Buy" for Consumers

... and you don't have to wait in line to get it

It's the volume containing CU's *Reports* for the year 1944, bound together to form a useful, convenient and attractive book.

It's useful, because it contains a wealth of up-to-date information on products, health and medicine, care and repair, household supplies and equipment, legislative and economic problems affecting consumers. . . .

It's convenient, because it keeps all this useful information together, always in order and always ready for reference when you need it. Convenient, too, because of the cumulative index it contains, enabling you to find the article you want with a minimum of effort. . . .

It's attractive, because its sturdy green cloth cover, stamped in white, makes a good-looking addition to any library. . . . and

It's a "Best Buy" because, for only \$2.50, you can have this valuable reference source as a permanent addition to your consumer library.

CONSUMERS UNION OF U. S., Inc.

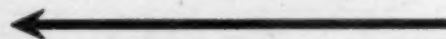
17 UNION SQUARE WEST • NEW YORK 3, N. Y.

I enclose \$2.50, for which please send me Volume 9 (1944) of CONSUMER REPORTS.

NAME _____

ADDRESS _____

V7



**Just fill in and return
the order form
at the left**

